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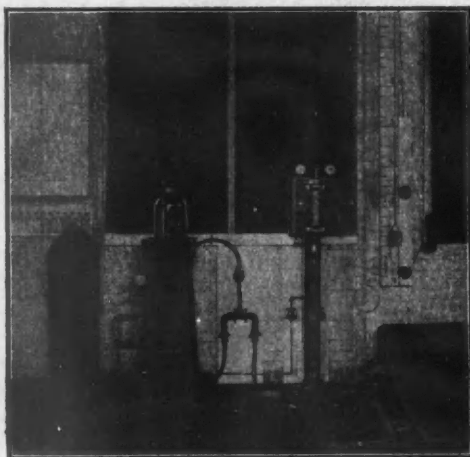
Reduction of Diphtheria in
Toronto Schools by Immunization

A Septic Sore Throat Epidemic
(Epidemiological, Clinical and Bacteriological Reports)

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"The Only Safe Water
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Reduction in Diphtheria in 36,000 Toronto School Children as a Result of an Immunization Campaign

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FROM December, 1926, to June, 1929, the Department of Public Health of the City of Toronto offered immunization against diphtheria, by the use of "toxoid" (anatoxine-Ramon), to the school children of the city. The administrative control of that undertaking, the various procedures that were used during the campaign, the records, the costs, etc., have been given in a previous communication¹. The purpose of this communication is to record the results.

As the physicians' notifications of diphtheria cases and the list of positive cultures were received daily by the Division of Medical Services of the health department the names were checked against the record cards of the campaign and tally was kept of each case of which there was record of test done or toxoid given. As the campaign progressed, this check gave indications on which certain changes in procedure, as shown in reference¹, were based.

In the study of the results of the campaign and particularly of the efficiency of toxoid, the Department of Epidemiology and Biometrics of the School of Hygiene, University of Toronto, was kindly invited to co-operate. The records of all tests done, toxoid given, etc., were transferred accordingly to punch cards which were filed alphabetically in the Department of Epidemiology, School of Hygiene. At the end of each year all the notifications of diphtheria in the city and the quarantine inspectors' records were loaned to the Department of Epidemiology. Here, each notification of diphtheria was again checked against the punch card records and all cases identified in these were so punched and tabulated. Incorrect spelling of names, changed names, changed or incorrect addresses, etc., necessitated the utmost vigilance. Every suggestive name, if it could not be identified immediately in

the punch card records, entailed personal investigation. Innumerable telephone calls to physicians, isolation hospital, schools, public health nurses and to homes were necessary. It is felt that through this thorough search and the double check, in the City Hall and in the Schools, there has not been omitted from the records any case of diphtheria that occurred in the group subsequent to coming into the records of the testing and immunization team¹. The information in regard to all diphtheria cases reported in the city was also coded and punched; these records were thus available for study of control groups.

Constitution of the "Treated" Group

The observations of subsequent diphtheria reported here cover the two and a half years during which the campaign was in progress and fourteen months following its completion. This study is confined to school children of the age group of 5 to 14. These limits were made in order to have the treated group and untreated controls in as nearly as possible identical environment, that of the public school. Altogether 36,189 school children passed through the hands of the "toxoid teams"¹ and form the group referred to in this communication as the "treated" group, not all of whom, however, were given toxoid. In the early part of the campaign the modified Schick test* was used to some extent in selecting the children—and by this procedure 5,648† children who were found to be Schick-negative, and were given no toxoid, are in the "treated" group. Similarly there are included 3,267 children who showed a 3+ reaction to the reaction test* and were given no toxoid. There are included also 1,386 children who were given only one dose of toxoid and 8,994 children who were given only two doses. 16,829 in the "treated" group were given three doses. A child was considered to be in the "treated" group as soon as he was first seen by the toxoid team. It is realized that that date is previous to the time at which immunization could be expected to be complete in those given toxoid. The "treated" group, as a whole, represents approximately one third of the school children and is therefore a fair sample of all the school children, and is similar to the "untreated" group in so far as the liability to diphtheria is concerned, when corrections for differences in the age and monthly distribution are made.

*The Reaction Test as explained in reference² was introduced by the Connaught Laboratories to detect individuals who might show considerable reaction if given the regular dosage of toxoid. The material used is toxoid, in an appropriate dilution in physiological saline; 0.1 cc. of this is injected intradermally on the arm. This test has been used for the past 6 years not only to detect those who would react, but as a control in the Schick test, replacing the heated toxin. Individuals who show definite induration at the site of injection are sensitive to the protein of diphtheria bacilli and might show, if given regular dosage of toxoid, marked sensitivity reaction, swelling, heat and pain at the site and some general disturbance. Such individuals are called in this and subsequent communications "3+ reactors." They constitute but 10 per cent of the school population and were not given toxoid. It is known that such individuals are readily immunized by toxoid in smaller dosage than usual and for this purpose specially diluted toxoid is now distributed.

†342 of these were also 3+ reactors and are included in that group. A miscellaneous group of 407 completes those who did not receive any toxoid—8980.

The School Population

The population of the city schools is not fixed throughout the year. For this study, the number of pupils entering in September and the additional *new* pupils that enter in each month throughout the year should be known. This information could not be obtained from any records, the increment of new pupils in the various schools not being separated from the transfers, etc. As the exact data were not available a compromise had to be selected. The compromise chosen was the largest monthly registration in the year, that of April or May. This is used as an average throughout the year. It is realized that for the early months of the school year this population is too large and will give smaller rates for the "untreated" children than actually existed. For the later months the number is possibly slightly less than the September registration plus the increment of new pupils. While these differences from the actual number tend to balance each other in the results, the calculated rates in the "untreated" group are probably smaller, to an insignificant degree, than the actual rates. The data are weighted, to that extent, against the "treated" group. In tabulating the diphtheria that occurred in the "untreated" all cases of 5 to 14 years of age that were not attending school, *e.g.*, visitors, institutional children, etc., were rigidly excluded.

Compilation of Data

Table I shows the progress of the campaign from month to month, the monthly increase in the "treated" group and consequent decrease in the "untreated," the number of cases that occurred in each month in the "untreated" and the monthly rates. In estimating the number of cases that would have occurred in the "treated" group in the absence of any campaign, as shown in Table III, the monthly rates prevailing in the "untreated" have been applied to the "treated" under observation in the corresponding month. The calculation by monthly rates is necessary as annual rates cannot be applied fairly to the "treated" on account of there being a greater proportion of children in the "untreated" group and smaller proportion of children in the "treated" group in the first half of the school year when diphtheria incidence and therefore liability to diphtheria is highest.

The data have been divided by the school year, September to August inclusive. It will be observed that the "treated" number of September 1 in the succeeding year does not correspond with the total number treated in the previous school year. The reason for this is that the age of the group of children in the preceding year has been advanced by one year—all the new 15 year olds eliminated from the study, and, of the 11, 12, 13 and 14 year olds, the same percentage has been eliminated as has been advanced to high school from the public school population according to the annual reports of the Board of Education;

TABLE I

Diphtheria Immunization Campaign—Toronto

"Treated" and "Untreated" Children in Each Month, with Cases and Rates in "Untreated"

	1 Total Untreated Children on 1st of Month	2 No. Treated During the Month	3 Child Months Untreated Children	4 5 Cases in Untreated		6 Total No. Treated on 1st of Month	7 Child Months All Treated
				No.	Rate		
1926-27							
December	86973	724	86611	99	114	0	362
January	86249	2068	85215	62	73	724	1758
February	84181	2480	82941	48	58	2792	4032
March	81701	3497	79952	46	57	5272	7021
April	78204	2222	77093	39	51	8769	9880
May	75982	2292	74836	33	44	10991	12137
June	73690	1491	72945	34	47	13283	14028
July	72199	91	72153	22	30	14774	14820
August	72108	27	72095	35	49	14865	14878
Total	72081	14892	703841	418	59	14892	76916
1927-28							
September	74276	1037	73758	36	49	13962	14430
October	73239	1484	72497	60	83	14949	15691
November	71755	1954	70778	71	100	16433	17410
December	69801	1333	69135	38	55	18387	19053
January	68468	1445	67745	29	43	19720	20443
February	67023	1772	66137	17	26	21185	22051
March	65251	2120	64191	16	25	22937	23997
April	63131	1622	62320	18	29	25057	25868
May	61509	1114	60952	14	23	26679	27236
June	60395	32	60379	15	25	27793	27809
July	60363	9	60358	19	31	27825	27830
August	60354	3	60353	11	18	27834	27835
Total	60351	13925	788603	344	44	27837	269653
1928-29							
September	62868	1267	62235	13	21	25827	26460
October	61601	848	61177	27	44	27094	27518
November	60753	1438	60034	36	60	27942	28661
December	59315	121	59254	23	39	29380	29441
January	59194	1272	58563	28	48	29501	30132
February	57922	634	57705	23	40	30773	30990
March	57288	27	57274	33	58	31407	31421
April	57261	8	57257	24	42	31434	31438
May	57253	3	57252	32	56	31442	31443
June	57250		57250	25	45	31445	31445
July	57250		57250	29	51	31445	31445
August	57250		57250	25	44	31445	31445
Total		5618	702501	319	45		361839
1929-30							
September	61060		61060	74		28704	28704
October	61060		61060	71		28704	28704
November	61060		61060	65		28704	28704
December	61060		61060	43		28704	28704
January	61060		61060	36		28704	28704
February	61060		61060	25		28704	28704
March	61060		61060	24		28704	28704
April	61060		61060	28		28704	28704
May	61060		61060	36		28704	28704
June	61060		61060	34		28704	28704
July	61060		61060	29		28704	28704
August	61060		61060	28		28704	28704
Total			732720	493			344448

and there have been added a number of children who had passed through the clinics at the age of four but did not form part of this study until they were advanced to five years of age. The percentage distribution, by age, in the "untreated" and "treated" groups is shown in Table II.

Table III, prepared from the data in Tables I and II, shows the estimated cases that would be expected to occur in the "treated" children, in the absence of any immunization, and the actual cases. The estimated number in each year has been obtained by applying the monthly rates in the "untreated" to the "treated" and correcting for differences in age distribution. It might be argued that diphtheria is not spread evenly over a city but occurs in the form of epidemics, localized to certain districts, schools, etc. If such districts had been avoided in the selection of children for immunization the comparison of rates in the "treated" and "untreated" would require further correction. There was, however, no such selection. Rather was it the reverse, the districts or schools showing the most urgent need being given immunization first. Correction for this factor, if it were made, would show therefore to the advantage of the "treated" group. On the whole the immunization has been so general throughout the city that such correction is considered to be unnecessary.

The Results

As Table III shows, in the three and a half years, approximately, of observation, in two and a half of which the "treated" group came into being and increased to 36,189, it is estimated that there would have occurred in the "treated" group, in the absence of immunization, 478 cases of diphtheria. The actual cases numbered 120. There were prevented, therefore, 358 cases—in the three and one-half years—a reduction in the group under observation, of 75 per cent. The reduction has varied from nearly 60 per cent in the first year to approxi-

EXPLANATION OF TABLE I

Column 1—Column 1 shows the school population less the "treated" children on the first day of each month.

Column 2—Column 2 shows the number of children "treated" (passing into the records of the team) in each month.

Column 3—Column 3 entries are obtained by subtracting one-half the entry in column 2 from the entry in column 1. It is obvious that as the 724 children were "treated" in December, the number of "untreated" decreased in the month by that amount—while the "treated" likewise increased. But the 724 children were not *all* under observation as "treated" children for the whole month. Assuming that the "treated" increased regularly throughout the month, a fair assumption, the observation on the newly "treated" group is equal to one complete month's observation on one-half the group; consequently the observation of the "untreated" group would be reduced by the same amount. The term "Child Month" is equivalent to the observation of one child for one month and is a convenient unit to use, being directly subject to addition, calculation of rates, etc. In each succeeding month, all the previously "treated" children are subject to the whole month's observation; the observation of the children "treated" during the month is equal, in child months to one-half the number "treated" in the month; the total observation of treated children during the month is therefore the total number "treated" previous to the month plus one-half the number "treated" in the month as shown in column 7.

There are included in the child months, though not shown in column 2, 1754 children who were seen at an earlier age but form part of this study only after they became 5 years of age.

mately 80 per cent in the last year. (This variation is due, in large part, as is shown in more detailed analysis,³ to the larger proportion of one dose children in the first year and to the fact that three doses of toxoid were not used till the fall of 1927. Another factor was the exclusion of the Schick-negatives from immunization in the early part of the campaign). It must be remembered, as previously stated, that

TABLE II

Percentage Distribution by Age of "Untreated" and "Treated" Groups in Each Year

Age	1926-27		1927-28		1928-29		1929-30	
	Untreated	Treated	Untreated	Treated	Untreated	Treated	Untreated	Treated
5	5.0	6.7	5.2	5.2	6.2	3.7	6.6	2.4
6	10.6	10.4	11.0	9.1	12.3	6.8	13.3	4.1
7	10.7	10.9	12.0	12.0	12.6	10.5	14.0	7.4
8	10.6	10.7	10.7	11.8	11.8	13.2	12.9	11.4
9	10.7	10.9	10.4	11.1	10.4	12.4	9.8	14.4
10	11.3	11.5	10.3	11.3	9.7	11.6	9.1	13.6
11	11.5	11.7	10.8	12.0	10.1	11.8	9.5	12.7
12	11.6	11.6	11.3	11.4	10.1	12.2	9.8	12.8
13	10.4	9.5	10.3	10.0	9.8	10.5	8.7	12.2
14	7.6	6.1	8.0	6.1	7.2	7.4	6.3	9.0

The percentage distribution by age, of the whole school population was obtained by taking the average of the percentage distributions for September and for June as published by the Board of Education. The distribution among the "treated" was known. The "untreated" were obtained by subtracting the "treated" in each age group in each year.

each case of diphtheria that has occurred in the group after the original test has been considered as a subsequent case, although twelve of the subsequent cases occurred within one month of receiving the first dose of toxoid, four within one month of the second dose and twenty-two were in Schick-negatives and 3+ reactors who were not given toxoid.

TABLE III

The Estimated Cases to be Expected in the Absence of Immunization, the Actual Cases, and the Estimated Reduction in the Treated Group

	Estimated cases corrected for age and monthly distribution	Actual cases	Estimated reduction in cases	
			No.	Per cent
1926-27	37	15	22	59
1927-28	103	27	76	74
1928-29	152	39	113	74
1929-30	186	39	147	79
Total	478	120	338	75

Correction factor for age 1926-27 = nil; 1927-28 = nil; 1928-29 = $\frac{150.5}{164.2}$; 1930-30 = $\frac{185.4}{231.1}$

As the 1,572 cases occurring in the "untreated" gave 118 deaths, or a case fatality of 7.5 per cent, it is reasonable to conclude that the

elimination of these 358 cases of diphtheria has thereby eliminated about twenty-five deaths.

Among the 120 subsequent cases there were five deaths, giving a case fatality rate of 4.2. (No deaths occurred among the 16,829 children who had been given three doses of toxoid). Had the general case fatality rate as found in the cases in the "untreated" prevailed in the 120 cases occurring in the "treated" group, with corrections made for differences in age distribution of the cases, there would have been expected from these cases seven deaths or a case fatality rate of six. The "treated" group as a whole suffered, thus, a smaller case fatality than the "untreated" group, which suggests either that some cases reported as subsequent cases were not diphtheria or that the resistance was so enhanced that death was prevented. One of the deaths was in a 3+ reactor, two were in one dose children, one of which had received the toxoid but nine days previously, and two were in two dose children.

An analysis of the occurrence of diphtheria in the various groups under observation, as reported in a later communication³, shows that three doses of toxoid eliminated approximately 90 per cent of the diphtheria estimated to occur in that group.

Summary

In 36,189 school children in Toronto passing through the hands of the toxoid team," 8,980 of which received no toxoid (5,649 of these were Schick negative and 3,267 were 3+ reactors to the Reaction Test), 1,386 received one dose of toxoid, 8,994 received two doses, and 16,829 received three doses, the diphtheria rate, during the observation period of two and a half years during the campaign and fourteen months following completion of the campaign, was approximately 25 per cent of the rate in children who did not pass through the records of the team. Among the 120 cases that did occur subsequent to coming under observation of the toxoid team, twenty-two were in the group of children who were given no toxoid and 12 occurred within one month of receiving the first dose of toxoid, 4 within one month of the second dose. In the 120 cases the case fatality was definitely less than in the cases occurring in the balance of the school population. This 75 per cent reduction in cases and 80 per cent reduction in deaths in the whole group (with approximately 90 per cent reduction in cases with no deaths in those given 3 doses of toxoid) was obtained without producing one severe reaction, and has paved the way for a more complete immunization of the Toronto children.

REFERENCES

- ¹The Administrative Control of the Diphtheria Toxoid Campaign in Toronto, 1930, F. S. Burke, M.B., CANAD. PUB. HEALTH J., v. xxi, No. 5 (May), pp. 209-218.
- ²Préparation de l'Anatoxine Diphtérique et Vérification de ses Propriétés, 1928, P. J. Moloney and C. J. Fraser Ann. de l'Inst. Pasteur v. 42, p. 1420
- ³The Efficiency of Toxoid in the Control of Diphtheria, 1931, N. E. McKinnon and M. A. Ross. CANAD. PUB. HEALTH J., v. xii, *in press*.

A Septic Sore Throat Epidemic

Part I---Epidemiological Study

A. L. MCKAY, B.A., M.B., D.P.H. AND
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A severe epidemic of septic sore throat occurred in Kirkland Lake, Ontario, in December, 1930. In a few weeks over 450 cases and 4 deaths were thereby added to the toll of disease spread through the use of raw milk.

Kirkland Lake is a recently developed town of approximately 8,000 population in the mining district of Northern Ontario. Though built practically on the rocky surface of gold mines, it has a good sewerage system and chlorinated water supply. The population is typical of a Canadian mining town, Canadian born predominating, with a very considerable admixture of Finns, Scandinavians and some Central Europeans. The proportion of people in the younger working age group is, as might be expected, unusually large and males greatly outnumber females in that group. While many families live in well-appointed houses, there are many labourers' families in two or three room flats. On the whole the people of the town and the town itself are prosperous. There is a small portion of people of the poorer class, economically; these were not involved in the epidemic, however, as raw milk, being twenty cents a quart, did not form a part of their diet.

Six physicians supply the medical services for the town. Dr. R. H. Armstrong is part-time Medical Officer of Health. A school nurse is employed and a Victorian Order nurse is resident in the town. A Red Cross Hospital has a capacity of about thirty beds.

Scarlet fever had been epidemic in the town during the fall term, and had caused considerable absence from school of both teachers and pupils. Twenty-nine cases were reported in October and November. Probably other cases occurred.

Late in November occasional cases of fairly severe sore throat, followed by glandular enlargement were noted by the physicians. Early in December these had increased so in number and, it was thought, in severity, that the condition was recognized as a distinct clinical entity and the seriousness of the situation was evident. The physicians had observed, too, that milk from one dairy was a factor common to the affected households; in fact, recognizing the condition, they could name the milk supply or, learning the milk supply to be the one under suspicion, they could make the diagnosis over the telephone. On December 12th the Medical Officer of Health issued an order

prohibiting the further sale of milk from two dairies and requested assistance from the Provincial Department of Health through the District Officer, Dr. W. E. George.

In company with Dr. George, the Provincial Epidemiologist and the Director of Laboratories visited Kirkland Lake, arriving on the afternoon of December 13th. A list of cases under physicians' care, with the milk supply recorded in every instance, was supplied by the physicians through Dr. Armstrong. This list showed that the vast majority of the cases used milk from Dairy B, but other dairies, too, had a significant number of cases. In view of the fact that there had been much interchange of bottles as well as milk between the dairies, this was not surprising. A conference of the Board of Health with the provincial officers was held on December 13th, and, following this, an order was issued prohibiting the sale of all raw milk in the town.

On account of the seriousness of the situation, Dr. W. J. Bell, Deputy Minister of Health, visited Kirkland Lake on December 15th, and offered to supply additional medical and nursing services if required. That day, however, the peak of the epidemic was reached; on the 16th, the physicians reported a much lower number of new cases. There was no doubt that the prohibition of sale of unpasteurized milk had controlled the situation. Following a conference with Dr. Bell on December 16th, the Council passed a by-law requiring that, from that date, all milk sold in Kirkland Lake (Teck Township) should be pasteurized. Arrangements were confirmed for the immediate importation and distribution of pasteurized milk, for the supervision, by members of the Department, of the installation of pasteurization equipment in private dairies and for a detailed investigation in regard to the source. This report deals with the epidemiological aspects of the investigation.

THE EPIDEMIOLOGICAL INVESTIGATION

The Onset of the Epidemic

The more detailed investigation of each case was begun on December 16th. It soon became apparent to the physicians investigating that, in some families affected, there had been earlier cases of sickness with sore throat as the predominant symptom, some dating back several weeks or longer; but few of these early cases had been seen by a physician and, from the description given, usually by some other member of the family, it was often impossible to decide whether the earlier sickness had been septic sore throat or not. When the description appeared to be reasonably accurate and the picture presented appeared identical with that of the recognized form of disease, *i.e.*, sore throat, prostration, markedly enlarged glands, often persisting, etc., the case was considered and recorded as septic sore throat. To this uncertainty in regard to early cases was added the further complicating factor of the

occurrence of scarlet fever previous to the epidemic. In some instances the history and description were sufficient to clearly differentiate between scarlet fever without a rash and septic sore throat, but in others such differentiation was impossible. Even in one boarding-house where the two diseases certainly occurred and possibly overlapped, a positive retrospective diagnosis could not be made for every case. Where the patients had been seen in the acute stage by a physician, after the epidemic was established there was little difficulty in distinguishing between the two diseases. The exact date of onset of the epidemic, therefore, is not clear, but it seems probable that definite cases occurred in October if not sooner.

In regard to the time, however, at which the cases assumed definite epidemic proportions there is no doubt. Tables I and II show the onset of 445 cases as accurately as it was possible to determine. As stated above, the earlier cases were accepted as such when all available evidence supported that procedure. One case occurred apparently in September, 4 in October and 55 in November, 312 in the first half of December, 65 in the latter half and 9 in January. January 15th is the onset of the last case reported. In 11 cases the date of onset could not be obtained. Altogether data have been collected on 457 cases. There was probably a small number of other cases, no records of which were obtained.

TABLE I

WEEKLY INCIDENT OF CASES		Cases
Week ending	October 31st.....	4
" "	November 7th.....	3
" "	November 14th.....	9
" "	November 21st.....	18
" "	November 28th.....	15
" "	December 5th.....	59
" "	December 12th.....	184
" "	December 19th.....	112
" "	December 26th.....	28
" "	January 2nd.....	6
" "	January 9th.....	5
" "	January 16th.....	2
		<hr/> 445

The explosive character of the outbreak as it occurred in December is well illustrated in Diagram I. The irregularity of the peaks in the line representing the incidence suggests repeated infections of varying intensity.

Age Incidence

The age incidence of the 457 cases is shown in Table III. The proportion of cases in adults is striking, the age group of 20 years and over supplying 62 per cent. The group of 15-19 supplied 9 per cent,

school children of 5-14 but 14 per cent, and the group of 0-4, 15 per cent. While this suggests that school children were less affected than other groups, information in regard to the attack rates in the

TABLE II
DAILY INCIDENCE OF CASES

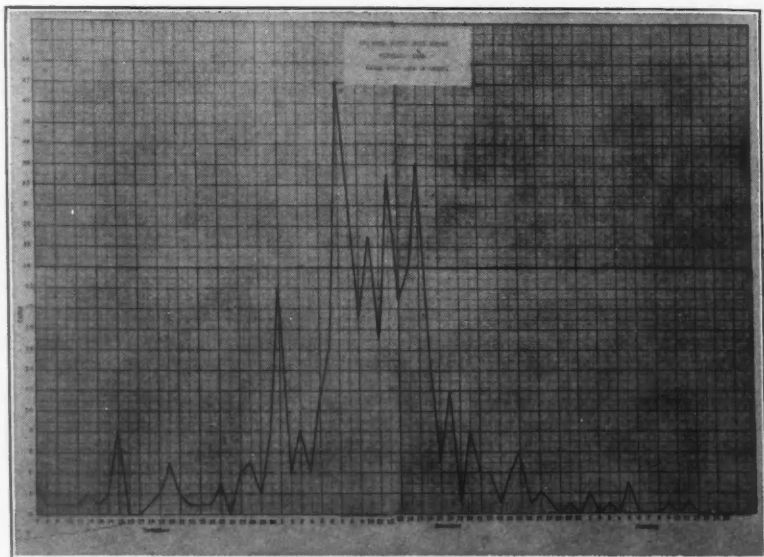
Day of Month	Cases				
	September	October	November	December	January
1				22	2
2				4	
3				8	1
4				4	
5				11	3
6				16	
7			3	42	
8			1	30	
9			1	19	1
10			1	27	1
11			1	17	
12			2	33	
13			1	21	
14			2	24	
15			8	34	1
16				15	
17				5	
18			1	2	
19			2	1	
20			5	8	
21			2	4	
22			1	4	
23			1	1	
24			1	4	
25			3	6	
26				1	
27			4	2	
28		2	5	1	
29		1	2		
30					
31		1	8	1	
Totals	1	4	55	377	9

TABLE III
DISTRIBUTION BY AGE AND SEX

Age Groups	Male	Per Cent	Female	Per Cent	Total	Per Cent
0-4.....	39	15.	28	14.	67	14.6
5-9.....	26	10.	14	7.1	40	8.8
10-14.....	15	5.2	9	4.5	24	5.3
15-19.....	12	4.6	29	14.6	41	8.9
20-24.....	31	12.	24	12.	55	12.
25-29.....	41	16.	38	19.6	79	17.3
30-34.....	39	15.	16	8.2	55	12.
35-39.....	18	7.	14	7.1	32	7.
40-44.....	14	5.3	12	6.2	26	5.6
45-49.....	12	4.6	10	5.2	22	4.9
50 and over....	11	4.3	5	2.5	16	3.6
Totals.....	258	100.	199		457	100.

various age groups is necessary for such comparison. The data of those exposed in all the households involved are not available but Table IV shows the number and percentage distribution of those exposed and of cases in households for which the data were obtained.

DIAGRAM I



DAILY INCIDENCE OF CASES

(Graph commences with November 7th and closes with January 15th.)

It also shows the attack rate in the various age groups in these households. The only contrast between the percentage distribution of those exposed and of those attacked is in the 10-14 group which formed 8.7 per cent of those exposed and but 5.3 per cent of those attacked.

TABLE IV
EXPOSED PERSONS AND CASES WITH PERCENTAGE DISTRIBUTION
BY AGE AND ATTACK RATE

	Exposed		Cases		Attack Rate Per Cent
	No.	Per Cent	No.	Per Cent	
0-4.....	109	15	62	14.6	57
5-9.....	61	8.4	35	8.8	52
10-14.....	63	8.7	24	5.3	38
15-19.....	64	8.8	38	8.9	59
20-24.....	75	10.3	50	12.	61
25-29.....	107	14.7	71	17.3	66
30-34.....	91	12.5	48	12.	53
35-39.....	54	7.4	27	7.	50
40-44.....	47	6.4	22	5.6	47
45-49.....	35	4.7	20	4.9	57
50 and over.....	23	3.1	15	3.6	65
Totals.....	729	100.	412	100.	57

This group shows the lowest attack rate, 38 per cent, while those of young working age, 20-30, show the highest rates, 60 to 66 per cent. This variation may be due to differences in susceptibility, exposure or to chance. The unusually high attack rate in all age groups is discussed under "multiple cases in families."

The incidence by sex, is also shown in Table III. Males outnumber females in all age groups except the 15-19 group. In adult groups this is possibly accounted for by the preponderance of males in the population and especially in those exposed, through the milk, as in large boarding-houses, bunk-houses, etc.

Multiple Cases in Families

The frequency of multiple cases in families is shown, in Table V, for 310 cases in 130 families. Eighty-five per cent of these cases occurred in association with one or more other cases in the same family and 43 per cent in households with two or more additional cases. This high frequency of multiple cases and exceptionally high attack rates in affected families, is possibly explained on the following basis: Milk from two, three or four cows was placed in a can and there was but little mixing of the contents of different cans during the bottling. Usually one or two cans were withheld at the regular bottling time and bottled later in the day as required. Heavily infected milk would thus be delivered to certain houses while other houses would get non-infected milk or milk infected only by contamination with utensils, bottles, etc. This distribution would give a greater concentration of massive infection in the unfortunate households.

TABLE V
FAMILY ASSOCIATION OF 310 CASES WITH OTHER CASES

36 Families with	1 Member of Family	ill—36 cases
48 "	2 "	—96 "
24 "	3 "	—72 "
10 "	4 "	—40 "
7 "	5 "	—35 "
4 "	6 "	—24 "
1 "	7 "	—7 "
130 Families		310 cases

Deaths

Four deaths occurred as follows:

Female: age 10 months, died December 8th. The duration of illness was 48 hours. The cause of death was given as convulsions with septic sore throat as contributory.

Male: age 41, died December 15th. The duration of illness was 8 days. The cause of death was given as septic sore throat.

Female: age 58, died December 15th. The duration of illness was 8 days. The cause of death was given as septic sore throat with jaundice.

Female: age 18, died December 24th. The duration of illness was 9 days. The cause of death was given as septic sore throat with six months miscarriage as a contributory cause.

Relationship to Milk

The general family distribution of milk in the town, by dairy, and the distribution to affected families is shown in Table VI. It is seen that though Dairy B supplied only 36 per cent of all households in the town, it supplied 84 per cent of the affected families. Dairy A and C each supplied 38 and 19 per cent respectively of the general distribution and 7 per cent of the affected families. In early December when suspicion was first cast on Dairy B, a certain number of Dairy B customers changed to Dairy A and C. Unprepared for the increased demand, Dairy A and C both obtained a certain amount of milk from Dairy B during the first ten days in December, bottled and distributed it without mixing with their own. Many families thus used Dairy B milk unknown to them.

TABLE VI
DISTRIBUTION OF MILK BY DAIRY AND BY FAMILY

Dealer	Number of Households Supplied	Percentage of all Households	Number of Families with Septic Sore Throat	Percentage of all Families with Septic Sore Throat
A	275	38.1	11	7.1
B	256	35.7	130	83.9
C	143	19.5	11	7.1
D	50	6.7	3	1.9
Totals	724	100.	155	100.

Much additional evidence incriminating Dairy B milk might be given. In one bunk-house and messroom accommodating about 150 men and using canned milk, only one case occurred. That patient gave a definite history of drinking Dairy B milk outside the camp two days before the onset. A family of two had used canned milk since coming to Kirkland Lake, but, influenced by the attractive waggon advertising of Dairy B indicating that the milk was from tuberculin-tested* cattle, the husband bought one bottle of milk from the delivery sleigh on December 5th. He and his wife drank the milk and, after their long fast, enjoyed it. In two days both of them had septic sore throat. All the boarding-houses using Dairy B milk, though sparingly, showed cases. Boarding-houses using canned milk or milk from some other source than those enumerated were free from cases except in a very few individuals who gave definite history of using Dairy B milk outside their regular eating place. A striking demonstration was in a more or less isolated section of the town where the majority

*When 7 cows from this herd were slaughtered, they all showed tuberculous lesions, so extensive in one animal that the whole carcass was condemned.

of the households used canned milk. A few used Dairy B milk and the sickness in this section was entirely confined to these.

Incubation Period

In a few cases in which Dairy B milk was not used regularly but was used on one occasion only, the onset of illness was on the second day after using the milk. The incubation period in these cases would appear to be, therefore, two days.

Contact Cases

In the 457 cases investigated, 59 occurred after December 16th and are probably, therefore, not due to milk as the distribution was stopped December 12th. Five other cases used canned milk only. These 64 cases, at least, therefore, are probably contact cases and constitute approximately 14 per cent of all. The contact cases in the Lee epidemic amounted to less than 5 per cent. The greater proportion here, is readily accounted for by the close contact in crowded quarters at this season of the year.

Relation to Scarlet Fever

Enquiry in regard to previous scarlet fever was made where possible. In 452 patients 54, or 11.8 per cent, gave an apparently definite history of previous scarlet fever; of 317 contacts, 38 or 12 per cent gave a history of previous scarlet fever. There is no suggestion in these figures that scarlet fever gave any immunity to septic sore throat. In the few affected families where there were scarlet fever convalescents at the time of the epidemic of septic sore throat, the convalescents developed septic sore throat apparently as readily as those who did not have scarlet fever. Two children with onset of scarlet fever on October 26th and November 1st, respectively, developed septic sore throat on December 1st. Another with onset of scarlet fever, November 18th, developed septic sore throat December 11th.

The history of scarlet fever and sore throats in the family of Dairy B is pertinent. In the latter part of October one child, age 10, developed scarlet fever and was isolated in one room with a nurse. Two days later a sister, age 18, developed scarlet fever. She was "isolated" with her sister. In a few days another sister, age 13, developed "a cold" which was followed by a "running ear." (There was no discharge when seen on December 16th). It was also reported, but not confirmed, that the mother who assisted in the bottling contracted a "sore throat" several days prior to the massive epidemic but continued to work in the dairy. Two sons who worked in the dairy gave no history of sore throat. Throat swabs were taken of all the members of the family,—the father, mother, three girls and two boys, and of two helpers who milked and cared for the cattle. Haemolytic streptococci were obtained from the mother, three sisters and from one of the milkers, the one who

regularly milked the cow which, as shown in the bacteriological report which follows, is considered to have been the source of the epidemic.

EXAMINATION OF COWS AND DAIRIES

The report of the examination of the cows in the various dairies and the physical conditions of the dairies—as made by Dr. McNabb—is given herewith:

"The milk supply of the municipality was derived from five producers and one distributor. A thorough physical inspection was made of each cow supplying milk with the exception of cows of Dairy F and Distributing Station E. Altogether 83 cows were examined of which 18 showed pathological conditions. The salient physical characteristics of the dairies are briefly indicated.

"*Dairy A*—The herd consisted of 39 cows, 28 of which were milking. This dairyman had a bottling machine; the washing was done by hand. Three cows showed abnormalities; one with palpable gland in tensor fascia lata, one with left front quarter caked, one with injury to two front teats. The latter was removed from the herd. Three hundred and fifty quarts of milk per day were distributed to 275 customers.

"*Dairy B*—The herd consisted of 39 head, 28 of which were milking at the time of the epidemic; 11 of these showed some abnormality of the udder. These abnormalities included pendulous and palpable inguinal glands, congested udders and "three teaters." The milk-house adjoined the stable. The milk was strained into eight gallon cans, from whence it was put into a bottling machine. The filled milk bottles were placed in a wooden tank and tap water run into the tank. This producer used no ice. There were no facilities for the sterilization of bottles or milk cans. Utensils were rinsed in lukewarm water. All work was done by hand. The milk bottles, after being rinsed, were placed on a wooden rack to drain. This dairyman distributed 400 quarts per day, to 246 customers.

"*Dairy C*—This was a model dairy as far as cleanliness is concerned. The cattle were kept in a scrupulously clean condition; the milk-house was separated from the stable; the bottles and cans were immersed in scalding water in a boiler placed over a box stove. The bottling was done by hand. The herd consisted of 24 members, 22 of which were milking. One member of this herd which had recently freshened had a slightly caked udder. No other abnormalities were discovered. This dairy was situated in close proximity to Dairy B. Between December 1st and December 15th, 160 quarts of milk were purchased from Dairy B and distributed to customers. This additional supply was not mixed with the milk of Dairy C. This dairy supplied 200 quarts to 143 customers.

"*Dairy D*—This dairy consisted of 9 milking cows, one of which was a "three teater." The owner stated that the fourth teat had never

been active. No other abnormalities were found. The cattle were kept in a clean hygienic condition. The milk-house adjoined the kitchen. The supply of hot water for washing pails and pans was procured by means of a hot water tank piped to the kitchen stove. The bottles were washed by hand. This dairyman distributed 70 to 80 quarts per day to 50 customers.

*"Dairy E—*The owner of this small dairy purchased his milk in bulk from a source* several miles distant. There were no facilities for sterilizing bottles and the milk-house was not satisfactory.

*"Dairy F—*This dairy (7 cows) was closed on December 15th as its condition was so unsatisfactory."

The bacteriological evidence, as presented on pages 236-241, is as convincing as the epidemiological evidence that milk from Dairy B was the source of the infection in this epidemic. It shows, too, that one or two cows were principally involved. It shows that the haemolytic streptococcus obtained from the milk of cow 98 was similar, as far as could be shown, to the haemolytic streptococci obtained from throat swabs of patients and certain members of the family of Dairy B and one of the milkers, the one who regularly milked cow 98.

DISCUSSION

There is no need for discussion in regard to the part played by raw milk in this epidemic. The evidence is conclusive that the causative organism was conveyed in the milk. In so far as the massive outbreak is concerned, it is established that the organism in the milk came from a diseased section of the udder of one cow and that the milk thereby was very heavily infected. In regard to the source of infection of the early cases, however, there is a question. There are two possible sources:—one, a slight infection of the udder giving thereby only light and possibly intermittent infection of the milk, and causing but few cases; another explanation of the few early cases, is that the milk at that time was contaminated after coming from the cow. This investigation has not brought out information by which the question of the correct explanation can be decided. Similarly, the relationship of the epidemic to the scarlet fever that occurred not only in the town but in the dairyman's family, is not clear. Though apparently identical haemolytic streptococci were recovered from the cow, the milker and the dairyman's family, it is not established whether the human carriers identified were the cause or the result of the infection in the cow. While the explanation seems plausible that the milker was infected as a carrier with the causative organism of scarlet fever, and that he subsequently infected the cow—such a hypothesis is not yet proven. To accept such a hypothesis, though it is supported by a certain amount of evidence, postulates that the organism, in passing through the bovine species acquires characteristics which enable it to produce

*Twenty cows.

a disease different from scarlet fever, the original disease. The disease septic sore throat, differs not only in the clinical manifestations but also in the further spread and in its attacking adult age groups to a much greater extent than is the case of scarlet fever even when milk-borne. The heavy infection in Dairy B milk contrasted with the relatively light infection when milk is contaminated by a scarlet fever case or carrier will not explain these differences between the two diseases.

Though the weight of epidemiological and bacteriological evidence in this and in similar epidemics strongly supports the contention that the cow can become infected from the human, the sequence of events has not been indubitably established and has not been repeated satisfactorily, or confirmed by experimental procedure. As the crucial test of producing septic sore throat with milk from an experimentally infected cow can never be tried, the solution of the relationship to scarlet fever or other human infections must be obtained through accurate epidemiological investigation. One thing is certain—that the opportunity for making such observations on septic sore throat will present itself repeatedly as long as unpasteurized milk is sold.

SUMMARY

An explosive outbreak of septic sore throat involving over 450 cases, with four deaths is reported.

The epidemiological evidence establishes that the source was infected milk from one dairy.

The attack rates in households exposed varies from 38 per cent in the 10-14 year old groups, to over 60 per cent in the group of 20-30 years.

The vast majority of infected families showed multiple cases.

Suggestive but inconclusive evidence is given that the cow was infected by human carriers of the causative agent of scarlet fever.

The epidemic was controlled by stopping the sale of unpasteurized milk.

Part II---A Note on the Clinical Findings

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FROM the clinical standpoint the cases of septic sore throat presented certain phases which are of special interest. As few physicians have had clinical experience with this disease, it may be profitable to briefly outline its essential picture. The symptoms and course of infection may be conveniently discussed under the following headings:

- A. Onset and early course.
- B. Glandular involvement.
- C. Blood stream infection.

Onset and Early Course

In most cases the onset was remarkably abrupt, so much so that some of the patients expressed the opinion that they had been poisoned. Two men, for instance, were walking to town after their evening meal, a distance of half a mile. Before reaching their destination one of them complained of sore throat, headache and chills. Within half an hour of this time, his companion complained of the same symptoms and suffered a similar onset of the disease. Examination on the following morning showed the following: temperature, 102.2°Fah.; pulse, 110; their faces flushed and their throats red, swollen and oedematous. The swelling of the throat in each case included the pillars of the pharynx, soft palate, uvula and tonsils. The oedema of the uvula was so great that it attained a width of three-quarters of an inch in each case. Such enormous swelling of the uvula was a common finding. The name of the disease is hardly descriptive of the picture of the typical throat, but once it is seen it is never forgotten. So characteristic and unique were the findings of these massive red throats that a diagnosis could not be missed, and that when we had sensed the cause of the infection, we could name the source of the patient's milk supply.

Glandular Involvement

Some cases improved quickly and cleared up after a few days without complications. Many cases, however, developed swelling of lymph glands. The anterior cervical chain was most commonly involved. The enlargements varied in size, being often as large as a walnut and tender to touch. There were no manifestations of involvement of other organs. The temperature in these cases was rarely above 102.5°Fah. and, falling gradually, it became normal in about two weeks.

Blood Stream Infection

This is indicated by a septic type of temperature and the evidence of infection of other organs. In these cases, the temperature, often, would be normal in the evening,—the patient feeling fine and hopeful of being out of bed in a few days—the next morning the temperature would rise to 104° or 105°Fah. and remain at that level for four or five days, before returning gradually to normal; many patients went on in this manner for five or six weeks, by which time the glandular enlargement had entirely disappeared.

Complications

The chief complications were arthritic and cardiac. The arthritis

affected the distal and small joints of the extremities and definite cardiac involvement was present in a number, as pericarditis, myocarditis or endocarditis. From a careful study of cases it may fairly be estimated that five per cent of those affected in the epidemic are now suffering from permanent heart damage. When one realizes that more than five hundred cases of the disease were reported, the importance of these findings is appreciated. Anaemia in varying degrees of severity has also followed the epidemic. Suppurating glands were quite common, especially in children. Some of these glands are still discharging and the children require treatment.

Of the fatal cases, six in number, all presented a typical septic appearance with bright eyes and undisturbed consciousness to the end. One case developed a very marked jaundice. In the treatment of some cases, scarlet fever antitoxin was administered in doses of 30 cc. or more, repeated as required. Apparently beneficial results were noted, and in some cases rapid improvement followed the administration of the serum.

Part III---Bacteriological Investigation

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D. T. FRASER,† B.A., M.B., D.P.H.

ON December 9th Dr. Armstrong, Medical Officer of Health, shipped a pooled sample of milk from each dairy to the Laboratory of the Department of Health. At the same time six throat swabs were sent from milkers and milk handlers of Dairy B, already suspected as the source of the epidemic, with the request that these be examined for streptococci. These were examined for *B. diphtheriae* as well as streptococci. Three of these throat cultures showed the presence of beta haemolytic streptococci. The sample of milk from Dairy B showed the presence of beta haemolytic streptococci, those from the other dairies did not. These results were wired to the Medical Officer of Health at whose order the distribution of milk of Dairy B was discontinued on December 12th.

On December 15th and 16th samples of milk were taken from each producing cow in each of the dairies A, B, C and D. Altogether 101 specimens from 85 cows were examined. In some instances separate samples were taken from each quarter, from the fore and hind quarters in some, and in 65 others a pooled sample was obtained. A record was made of the physical appearance of each sample. A portion of the sediment obtained by centrifugalizing each sample was smeared and stained by Pappenheim's and Gram's stain. A loop of sediment was

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streaked on rabbit blood agar plates. Poured plates were also made by planting 1 cc. of this sediment into 10 cc. of melted blood agar, another set of cultures was made by planting 1 cc. in beef infusion broth, incubating over night and streaking the culture on blood agar plates. These samples were all again examined, those of Dairy B several times, by making cultures from the cream layer, from the whole milk as well as sediment, both by direct plating and from serum broth cultures.

Of the 85 producing cows, haemolytic streptococci of the beta type were found in samples from 17. From Dairy A, of 28 cows, eight showed the presence of haemolytic streptococci. Of these eight none were found to have pathological conditions on inspection. In Dairy B, of 28 cows, six showed haemolytic streptococci. Of these, five showed pathological conditions evident on inspection. One was apparently normal. In Dairy C, of 22 cows, three yielded haemolytic streptococci among the apparently normal cows. In Dairy D, of seven cows none yielded haemolytic streptococci. Haemolytic colonies were fished to blood agar slants and tested in the following manner: (a) hydrolyzation of sodium hippurate; (b) pH determination in glucose broth; (c) carbohydrate reaction; (d) determination of haemolytic titre; (e) examination for the presence of capsules by the moist india ink method; (f) pathogenicity.

Sodium Hippurate^{1, 2, 3}—On examination of 17 milk cultures for their ability to produce hydrolysis of sodium hippurate, 15 of the haemolytic streptococcus cultures isolated from the milk were found to produce hydrolysis. Two of the cultures, namely from cow 98 and cow 264, both members of Dairy B herd, failed to hydrolyze sodium hippurate. In repeated tests it was found that the medium of Hardenbergh³ yielded as satisfactory results as pork muscle broth².

*pH Determination*⁴—The 15 milk cultures which caused hydrolysis of sodium hippurate were found to have a pH of 4.3 to 4.6, when grown for 48 hours in beef infusion 1 per cent glucose broth at an initial pH of 7.4. In contrast, the cultures from cow 98 and cow 264 had a final pH of 5.1 and 5.2 respectively. Seventy-two hours' incubation did not show any further change in pH. Controls of uninoculated tubes of broth were incorporated in the test.

Carbohydrate Reactions—The cultures from cow 98 and cow 264 produced acid when grown in sugar-free serum broth containing 1 per cent of the following: dextrose, lactose, saccharose and salicin but did not produce acid in broth containing inulin, mannite or raffinose (*i. e.*, pyogenes group). The other 15 strains varied in their utilization of these carbohydrates; some falling in the pyogenes group and others not.

*Haemolytic Titre*³ and *Capsule Formation*⁵—The examination of the moist india ink preparations was carried out upon 18 hour fresh blood agar cultures. Sixty-five Kirkland Lake and (as a basis of

comparison) 111 other cultures were examined, including well-known scarlet fever and erysipelas streptococci, as well as strains isolated from puerperal sepsis, and from animal sources.

Neither the determination of the haemolytic titre nor the examination by the india ink method for capsules resulted in any significant grouping of the 17 strains of haemolytic streptococcus culture isolated from milk.

Pathogenicity—Six cultures of the milk strains were grown in glucose serum broth for 24 hours; also in sterile milk. One-half cc. of each of these cultures was injected intraperitoneally into mice. In the case of strain "cow 98" mice succumbed within 18 hours. A rabbit injected intravenously with 2 cc. of a suspension of 10 cc. saline added to an 18 hour blood agar slope died in 18 hours. A broth culture of strain "cow 264" killed a mouse in three days. Four other cultures isolated from milk were not found to be pathogenic for mice, whereas six strains isolated from throat swabs of cases of septic sore throat were found to be similar in virulence to strain "cow 98."

Summarizing the findings in regard to the bacteriological investigation of the milk, of 85 producing cows, 17 showed the presence of haemolytic streptococci of the beta type, two of which, namely, those from cow 98 and cow 264, may, by the present criteria, be considered as of "human" origin. Further, these two strains resemble, in their utilization of carbohydrate, non-hydrolysis of sodium hippurate, and final pH in glucose broth, the human strains to be described hereinafter and isolated in this epidemic.

A bacteriological investigation was made of cultures obtained from 90 individuals. For convenience, these may be classed as cases and convalescents, milk handlers and their families, and a group of school children.

Cases and Convalescents—This group comprised 20 individuals. Two swabs were taken, one of which was placed in serum broth within two hours. These swabs were received at the laboratory 24 hours later. Direct plating of the dry swabs before and after moistening with serum broth, and plating after these swabs had been incubated 18 hours in serum broth, gave results very much inferior to those which had been placed directly in serum broth before shipping. Thus, under the conditions of the test, dry swabs were very unsuitable for recovery of haemolytic streptococci. The serum broth cultures were incubated 18 hours before plating on the surface of sheep blood agar. Beta haemolytic streptococci were obtained from each of the 20 individuals comprising this group.

Milk Handlers and Their Families—This group consisted of 30 individuals, representing 4 dairies. Haemolytic streptococci were found in 15. These were distributed among the various dairies as follows:

Dairy A.....	5	out of a total of 7 were positive.
Dairy B.....	5	" " " " 9 " "
Dairy C.....	4	" " " " 9 " "
Dairy D.....	1	" " " " 3 " "
Distributor E.....	2	negative.

School Group—This group consisted of 40 individuals of whom 22 yielded haemolytic streptococci. The purpose of taking swabs for culture from this group was to obtain some idea of the incidence of haemolytic streptococci in the throats of individuals representing a random sampling of the community. The school was the most convenient group for this purpose. It is realized that the age is not representative of the population. The swabs were taken on December 18th, which was after the peak of the epidemic had been reached. The significant finding is that haemolytic streptococci were demonstrated in the throats of apparently well individuals in much higher proportion than would be anticipated in a normal community. Of the 22 with positive cultures, there were 9 with a history of sore throat, cervical adenitis or domestic contact with cases; 8 with negative histories; two with a history of contact with scarlet fever and three from whom no history was obtained. Among those with negative throat swabs, 5 gave a history of illness or family contact, 7 gave a negative history and from 6 no history was obtained. There was no obvious correlation between the milk supply and the incidence of positive cultures.

Carbohydrate Reactions—The utilization of carbohydrates was tested in sugar-free infusion broth, to which horse serum and 1 per cent of the carbohydrate were added. The strains from cases, convalescents, milk handlers and their families produced acid in broth containing lactose, salicin and saccharose, but not mannite, inulin or raffinose, thus falling into the pyogenes group. The strains from the group of school children reacted similarly, with the exception of 5 strains. Two of these were positive for mannite, 2 positive for raffinose and one negative for lactose.

Sodium Hippurate—Eighteen strains, isolated from humans, were tested for their ability to hydrolyze sodium hippurate. Ten of these were from cases of septic sore throat, two were from milk handlers and six from the group of school children. None hydrolyzed sodium hippurate.

pH Determination—The strains used for the sodium hippurate test were also tested for acid production. Three strains from cases of septic sore throat gave a final pH of 4.9. The pH for the remaining strains ranged from 5.1 to 5.4.

Toxin Production—Five strains were tested for the production of soluble exotoxin by using the filtrate from a 48-hour broth culture as a skin test in 7 Dick positive and 5 Dick negative individuals in a

dilution of 1:500. Four of these strains from cases of septic sore throat yielded a moderate amount of toxin. One strain, from a member of the family of the owner of Dairy B, produced a strong toxin which gave positive reactions in all of the 7 Dick positive individuals tested and no reactions in the 5 Dick negative subjects. It may or may not be of significance that this child was reported in October as having scarlet fever. She was well at the time the culture was taken. These five strains were further tested on 9 chinchilla rabbits⁷ at dilutions of 1:40 and 1:80. A 1:40 dilution of a toxin, which had been detoxified by incubation after the addition of formaldehyde, gave a negative skin reaction in all the animals. The strain from the child of dairyman B gave positive reactions in 7 rabbits at a dilution of 1:80, 8 rabbits gave positive reactions at 1:40. Two strains from the patients gave a fair proportion of reactions at the higher dilution, but all four gave some positive reactions at 1:40.

Neutralization tests were carried out on 6 rabbits with 4 strains from patients. The toxin-antitoxin mixture consisted of 1 cc. of a 1:20 dilution of toxin and 1 cc. of a 1:50 dilution of scarlet fever antitoxin, giving a final toxin dilution of 1:40 and a final antitoxin dilution of 1:100. The controls used consisted of a similar mixture of toxin with tetanus antitoxin, scarlet fever antitoxin 1:100 alone, tetanus antitoxin 1:100 alone, toxin 1:20 alone. All rabbits reacted to the toxins. Complete neutralization with this dilution of scarlet fever antitoxin took place in all rabbits for three toxins and in all but one rabbit for one toxin, the remaining animal showed partial neutralization. One animal of the 6 gave a negative reaction to the toxin-tetanus antitoxin mixture for one toxin but showed an unusually small reaction to this toxin alone. Two strains (Lee 76, Lee 29A) obtained through the kindness of Dr. E. S. Robinson from a septic sore throat epidemic at Lee, Mass., and two (C108, X40) from Dr. Howard Brown, also were found to produce toxin as indicated by skin tests on rabbits. The toxins from the latter two strains were completely neutralized and those from the former two were partially neutralized by scarlet fever antitoxin in the dilutions used for the test previously described.

The neutralization by scarlet fever antitoxin of toxins from streptococci of non-scarlatinal origin is not an exceptional occurrence. In an unpublished study in the Connaught Laboratories it was found that of 32 stains isolated from various haemolytic streptococcal infections other than scarlet fever, 30 produced toxins which were neutralised by scarlet fever antitoxin as indicated by intracutaneous tests on chinchilla rabbits. Kirkbride and Wheeler⁸ found that approximately 67 per cent of the toxins both of scarlet fever and non-scarlet fever origin were neutralized by scarlet fever antitoxin in intracutaneous tests on goats.

SUMMARY OF BACTERIOLOGICAL FINDINGS

1. Milk samples from 85 cows yielded 17 strains of beta haemolytic streptococcus. Two of these belong to a group assumed to be of "human" origin based upon their neutralization of sodium hippurate, final pH, and carbohydrate reactions.
2. Throat cultures were obtained from 20 cases of septic sore throat. All showed the presence of beta haemolytic streptococci.
3. Of the group of 30 milk handlers and their families, 15 showed the presence of beta haemolytic streptococci.
4. Throat cultures from 40 school children yielded 22 positive cultures.
5. Twenty strains isolated from 20 patients culturally resemble the strains isolated from the milk of two cows. This comparison was based upon non-utilization of sodium hippurate, acid production and utilization of carbohydrates. All of the strains tested from the milk handlers also fall into this group. No serological comparison has as yet been attempted.
6. Five strains isolated from 4 patients and one strain from a child of a milk producer yielded soluble toxins which could not be differentiated from toxins of scarlet fever strains. Of the toxins tested all were neutralized by scarlet fever antitoxin.

REFERENCES

- ¹Ayers, S. H. and Rupp, P., *J. Infect. Dis.*, v. 30, pp. 388-399, 1922.
²Robinson, E. S. and Beckler, E. A., *J. Prev. Med.*, v. 3, pp. 225-236, 1929.
³Hardenbergh, H. G., *New England J. Med.*, v. 202, pp. 373-376, 1930.
⁴Ayers, S. H., Johnson, W. T. and Davis, B. J., *J. Infect. Dis.*, v. 23, pp. 290-300, 1918.
⁵Brown, J. H., Frost, W. D. and Shaw, M., *J. Infect. Dis.*, v. 38, pp. 381-388, 1926.
⁶Salter, R. C., *Am. J. Hyg.*, v. 1, pp. 154-181, 1921.
⁷Fraser, F. H. and Plummer, H., *Brit. J. Exper. Path.*, v. xi, pp. 291-297, 1930.
⁸Kirkbride, M. B. and Wheeler, M. W., *J. Immunol.*, v. xii, pp. 19-24, 1927.

17th Annual Meeting

Ontario Health Officers' Association

HART HOUSE THEATRE, TORONTO

May 20th to 22nd, 1931

Are Vital Statistics Worth While?*

H. B. FRENCH

Deputy Registrar, Province of British Columbia

UNDER any circumstances it is not easy to clothe vital statistics with interest. To be called upon to do so when so many able and fluent speakers have already dealt with the subject from so many angles almost induces "paralysis with specified cause." I can but crave your indulgent hearing.

There is an old adage, "An ounce of prevention is better than a pound of cure." Who are or who should be the great protagonists in the battle of prevention of disease? Undoubtedly it is the duty of our public health officers and medical practitioners. To the public health officer is entrusted the safeguarding of the health of his community. Is it possible that public health officers fail to realize to the full the true significance of the responsibilities laid upon them? It would hardly be an exaggeration to say that public health officers have the power of life and death. To them is entrusted the duty of controlling communicable diseases in their community. By prompt action in their own community they may perform a national service in preventing the spread of disease to neighbouring communities. Charged, then, as they are with such serious responsibilities, afforded such illimitable opportunities of service to their communities and to the nation at large, should any health officer through indifference or any other cause spurn or ignore any source of information, knowledge, or assistance that may be open to him?

While it is true that the medical practitioner is still, and always must necessarily be, individualistic in outlook and practice, yet it would, I think, be difficult in these days to find a medical practitioner who does not recognize that curative medicine alone is not sufficient. He must also be preventive in attitude and spirit. Eventually the medical practitioner will develop a fuller spirit of service; he will become more communal in his outlook, the state will demand greater service, and so he will become truly "Doctor"—Teacher of the community who need and look to their medical adviser for guidance in all matters pertaining to their health.

If, then, it can be shown that vital statistics, even in the smallest possible degree, can aid in and are allied to the prevention of disease, it will, I think, be readily conceded by all that the study of vital statistics is indeed worth while.

Here may I be permitted to quote from well-known writers whose estimates of the value of vital statistics to public health can hardly be lightly regarded or called in question. The well-known statistician, Sir Arthur Newsholme, testifies as follows:

*Presented at the Vital Statistics Section, Canadian Public Health Association, May, 1930.

"The Registration of causes of death has given an immense impetus to sanitary work, and it is scarcely too much to say that modern sanitary science owes its existence to the registrations of deaths, their causes, and the localization of unsanitary conditions thereby ensured. By its means, conjoined with the Census, we are able to submit to numerical analysis the facts relating to the laws of vitality, the influence of age and sex, of civilization, occupation, locality, season, and many other agencies; and our knowledge of all the facts bearing on health and disease has attained a precision never before known."

Another writer, referring to the value of mortality rates as indicating the character and amount of prevalent sickness and their geographical distribution says:

"These observers, like watchmen on the walls, are ever on the lookout so that they can see exactly what is going on, and neither plague nor cholera can take the nations by surprise."

Sir George Newman, Chief Medical Officer of the Ministry of Health in Great Britain, in stating the basic principles which must be fulfilled before sound foundations for a national system of preventive medicine can be laid, writes thus:

"First there must be ascertainment and accurate registration of the data available. Statistics are recorded of facts numerically presented. We cannot do without them. We cannot even begin to measure the value of methods or results without them. We require to know the Census return, the population at risk, the birth rate, the mortality rate and the sickness rates."

Referring to the necessity of registration of sickness, Sir Lyon Playfair, in the year 1874, expressed himself as follows:

"The record of death only registers, as it were, the wrecks which strew the shore, but it gives no account of the vessels which were tossed in the billows of sickness, strained as they often are by recurrent storms. Registration of sickness would tell of the coming storms, and enable us to trim our vessels to meet them."

If vital statistics are not worth while I would ask what prompted the Health Committee of the League of Nations, in organizing its programme of statistical work, to prepare a series of handbooks describing the official vital statistics of the various countries? How is it that life insurance companies pay so much attention to vital statistics? For instance, the Metropolitan Life Insurance Company spent no less than seven years in compiling the medical statistics of mortality among the policyholders of the Industrial Department for the years 1911 to 1916. In their endeavour to secure accuracy and completeness of the data they received about thirty-five thousand letters from physicians in the United States and Canada. This interest on the part of the medical men was not spontaneous,—it was evoked by the statisticians themselves. Persistent scrutiny of the death certificates revealed incomplete or unsatisfactory certification of death,—hence reference was made to the doctors for more complete particulars as to the cause of death in order to secure more accurate classification. Let me cite a few of the results of the investigations:

In 207 reports of Purulent Infections and Septicemia the report was changed in 70 per cent

In 637 reports of Cancer* the report was changed in 72 per cent.

In 1,859 reports of Meningitis the report was changed in 73 per cent.

In 2,296 reports of Paralysis† the report was changed in 84 per cent.

In 122 reports of Traumatism by firearms the report was changed in 78 per cent.

In 1,486 reports of Fractures† the report was changed in 91 per cent.

In 422 Ill-defined Causes the report was changed in 71 per cent.

*Organs not specified.

†Cause not specified.

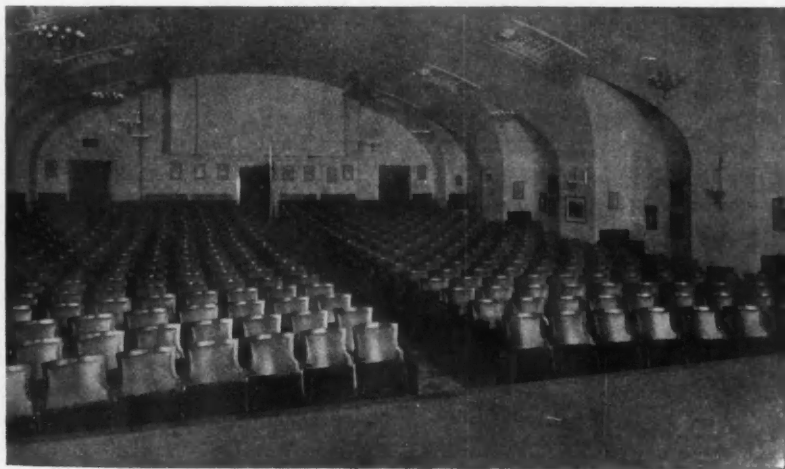
It must not be assumed from the foregoing figures that these changes in the classification of cause of death were attributable to ignorance on the part of the doctor. No doubt, as the author suggests, the greater number of changes were necessitated by physicians reporting only conditions such as septicemia, peritonitis, and other merely terminal incidents in the course of the last illness, and failing to report all the morbid conditions known to them which had any bearing on the cause of death. No doubt the terminal condition is uppermost in the physician's mind as it required the largest part of his effort on behalf of his patient. While the fault is perhaps excusable, let the physician, however, endeavour to bear in mind that another duty awaits him,—service to the living. Further, let it not be imagined that it is only the doctors who are responsible for faulty or incomplete returns. If time were available I could bring ample proof to show that undertakers, clergy, parents, and others whose duty it is to supply statistical information are equally at fault. If vital statistics are to approach the acme of usefulness in the prevention of disease, it can only be accomplished by educating the people to realize that the utmost care should be exercised in replying to every single question on which information is sought.

In conclusion, as an illustration that vital statistics can, when properly applied, be of an intensely practical nature, I quote the following taken from an article which appeared some years ago in the *American Journal of Public Health*. The writer says:

"In the summer of 1910, I was invited by a board of county commissioners and board of aldermen to visit their county town and inspect a small collection of water on the outskirts of the town that was supposed to be responsible for a large amount of their sickness. After looking over the pond in the morning and making a general sanitary survey of the town, I walked over to the local registrar's office to see how many people were dying and what they were dying from. At five o'clock I consulted with the board of aldermen, several physicians, and health officers and others. I called their attention to the fact that the small collection of water was but one very small item for consideration in their health situation; that malaria had caused very few deaths in their town, and it was doubtful if the pond had much to do with their malaria as there were so many other breeding places for mosquitoes; that with a little ditching and kerosene oil (I went into details), the pond could be dismissed as a health menace; that whereas the pond was of little consequence, other conditions of health in their city were of grave consequence; that,

taking statistics from their own official, they had a death rate of 27.5 per thousand which meant 12.5 people out of every thousand of their population died in excess of the average death rate that obtained throughout the United States; that for four thousand population this meant an annual unnecessary loss of fifty lives to their town; that even if they had a death rate of fifteen, some of the fifteen would be from preventable diseases and, therefore, the fifty lives lost must necessarily be regarded as excessive preventable deaths; that their records showed a death rate from tuberculosis of three hundred and seventeen per one hundred thousand instead of the average of one hundred and sixty-seven; that their records showed a death rate from typhoid of seven and one-half times the average; that during the last winter their town had had its share of deaths from measles for sixty years; that this last fact meant one of two things; either an extremely malignant epidemic or more probably inefficient quarantine; that they were most inconsistent in having a railroad that passed through the town to build an overhead bridge at a cost of \$18,000 because during ten years the railroad had killed, at a crossing, as many as ten people; that the interest on the original investment of the railroad, and the wear and tear of the bridge, would amount to at least \$1,500 per year, which they were forcing the railroad to spend to prevent one needless death; that while they were requiring the railroad to spend this amount to prevent one death, they, the aldermen, were spending only \$150 to prevent fifty deaths. . . Since that visit, and, I believe largely as a result of that visit, that town and county have taken an unusual interest in public health work. . .

There are many people who will become enthused over generalities, but the practical, cool heads that we usually find dictating municipal policies are men who want facts, and the only way to reach this necessary influence in bringing about sanitary reforms is through vital statistics."



HART HOUSE AUDITORIUM, TORONTO

In which the Sessions of the Ontario Health Officers' Association will be held,
May 20th to 22nd, 1931.

Regina---Convention City

June 17th, 18th, 19th, 1931

REGINA is an ideal convention city, possessing not only the attractions of a modern western city, but having the facilities of one of the finest hotels of Canada as head-quarters for the Associations, accommodating all the sessions of the Convention. Of great interest to members from Eastern Canada is the opportunity of studying Saskatchewan's splendid public health organization and the Department of Health of the City of Regina. In the following pages a brief outline of the recent advances in public health in Saskatchewan is presented which brings before us the real leadership of the West in many matters of public health.

ENTERTAINMENT

The Committee arranging for reception and entertainment are providing a programme of very special interest for the visiting members and their ladies. All who are interested in golf will find that the local committee have made

adequate provision so that they may enjoy Regina's best courses.

TRANSPORTATION

In view of the difficulties and the limitations pertaining to the purchase of tickets on the standard certificate plan, the Committee has decided to recommend the use of the summer tourist plan. Depending on the distance to be travelled, summer tourist fares are cheaper than fare and one-half, as secured by convention certificates and, in addition, they allow stop-over privileges until October.

TRANQUILLE, KAMLOOPS AND VANCOUVER

A cordial invitation is

extended by Dr. R. E. Wodehouse, General Secretary, Canadian Tuberculosis Association, to all members of the Association to spend Saturday and Sunday at Tranquille Sanatorium and to visit Kamloops, *en route* to the Canadian Medical Association's meeting in Vancouver.



DR. W. R. COLES
Medical Officer of Health, Regina
President, Saskatchewan Health Officials' Association

Hotel Saskatchewan

Convention Headquarters

TOWERING high above all other buildings in the vicinity, Hotel Saskatchewan, the Convention Headquarters in Regina, stands out as one of the landmarks of the city. It occupies a spacious site on Victoria Avenue, facing the park. The Hotel is in Georgian style with the first two stories above the street faced with Tyndal stone, and the upper part of the building with grey-coloured brick, trimmed with Tyndal stone. It represents the best in hotel planning as a result of the extensive experience of the Canadian Pacific Railway Company in providing, not only for the needs of its individual guests,

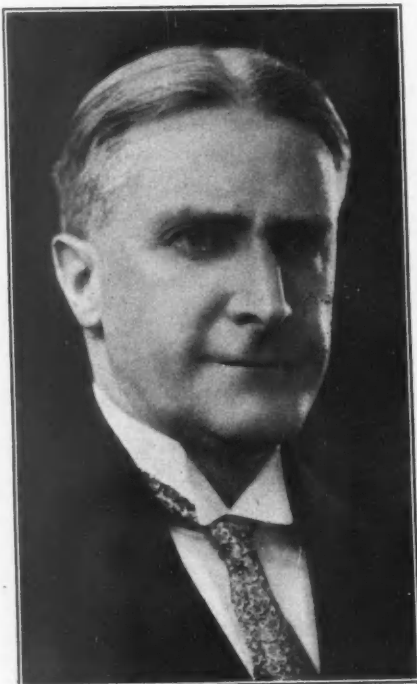


HOTEL SASKATCHEWAN

All sessions of the Convention will be held in the Hotel.

but of the special requirements of association meetings and other conventions. The large rotunda on the main floor, the spacious dining-rooms, the luxurious public rooms on the first floor, including the large ball-room, are in keeping in design and decoration with such a magnificent hotel. The general sessions will be held in the ball-room and the section meetings will be amply accommodated in several of the smaller public rooms. On the eight upper floors are 252 bed-rooms, each with private bath and twin beds. Our Committee is indebted to the management of the Hotel for their most generous co-operation in planning for the success of the Convention.

Public Health Progress in Saskatchewan



THE HONOURABLE DR. F. D. MUNROE
Minister of Health, Saskatchewan
Hon. President, Canadian Public Health Association

PUBLIC health work has been extended in Saskatchewan during the years 1929 and 1930 in several directions. The most important extension is the result of the recommendations of the Commission appointed by the present Government, late in 1929, to make a survey of the conditions existing in mental institutions, and arrangements for the care of mental defectives. In pursuance of the recommendation of the Commission, the Government have constructed and equipped a psychopathic ward in connection with the Regina General Hospital, and materially assist in the cost of operation of this section of the Hospital. To this ward, patients in the early stage of mental disease are admitted for observation and treatment and after treatment, may be discharged as cured or committed to an institution without those objectionable preliminaries which have in the past caused criticism. In July, 1930,

a new wing was opened at the Weyburn Mental Hospital, and the more complete classification and separation of the insane and the mental defective is rendered possible. Experimental work with malarial treatment in cases of general paresis of the insane is being carried out.

A Cancer Commission was set up in 1930, under the Chairmanship of the Honourable Dr. F. D. Munroe, and Doctors R. O. Davison, and David Low. The principal duties of the Commission are to enquire as to the mortality from, and the treatment of, cancer—to provide for the establishment of consultative clinics—to provide a supply of radium necessary for diagnosis and treatment. The Commission is authorized to give medical attendance and treatment to any indigent person. An emanation plant is in operation at the University of Saskat-

chewan at Saskatoon and shortly Cancer Clinics will be opened and radium supplied.

An Act was passed to care for mentally defective persons, authorizing the establishment of training schools and providing for the apprehension of persons suspected of being mentally defective and their committal either to a training school or to the care of friends.

In July, 1930, the first Summer Course in Public Health Nursing was held at the University of Saskatchewan, the Department and the University co-operating. Forty-three nurses completed the course of lectures.



PARLIAMENT BUILDINGS, REGINA, SASKATCHEWAN

A survey of the crippled children in the Province was made largely with the co-operation of the school teachers, and measures taken to assure treatment either through voluntary agencies, such as the Shriners and the Red Cross or by the local physician. A survey is to be made also as to the prevalence of trachoma throughout the Province, with a view to measures for its eradication.

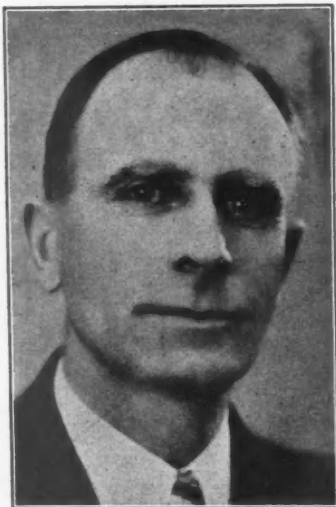
The sanitary service has been decentralized; eight Sanitary Districts have been established. A resident Sanitary Inspector, whose duties include the sanitary supervision of towns, villages, hamlets, summer resorts and tourist camps, the inspection of milk supplies, meat stores and slaughter houses, ice fields, lumber and construction camps, is stationed in each district. In addition to the above, he

Three Interesting Days
June 17th, 18th and 19th

You Cannot Afford to Miss this Meeting

advises upon water supplies, dairy herd housing, etc., and co-operates to the fullest extent with the municipal councils and farmers in all sanitary matters and, from time to time, as occasion arises, delivers addresses upon cognate subjects and distributes literature for the Department. Recently to his duties has been added the inspection of hotels.

In connection with the Provincial Laboratories, a special course, arranged by the Department, was held at the University of Saskatchewan at Saskatoon, for laboratory technicians. The course was conducted by Professor Lindsay of the University Faculty, and was attended by seven students, all of whom were nurses.



DR. F. C. MIDDLETON, D.P.H.
*Deputy Minister of Public Health,
Saskatchewan*
President, *Canadian Public Health
Association*

In February, 1931, a further step in mental hygiene was taken by the appointment of Dr. J. W. McNeill as Commissioner of Mental Health. The Commissioner will be charged with the direction of all mental health activities. The work will be carried out under three divisions—prevention, treatment of incipient cases and the treatment and control of developed cases.

The Public Health Act was amended at the 1931 Session of the Assembly extending the powers of the Minister of Public Health to the regulation and construction, ventilation, equipment, inspection and sanitary control of bakeshops, apartment houses and swimming pools.

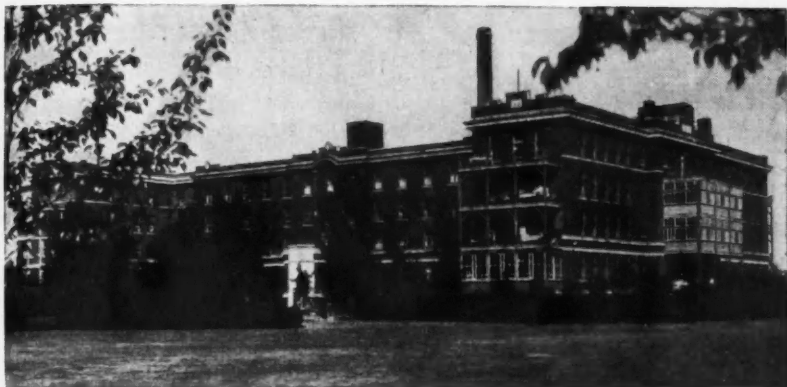
The administration of relief in the unorganized districts where the sparse population consists chiefly of half breeds is a function of the department and for this purpose, some \$23,000 was expended last year.

The Department has established a lending library of books treating of health matters, for school children and teachers. Books are issued on application for a period of two weeks and this service is free of charge.

On the 26th of February, 1931, the Legislative Assembly passed a resolution requiring:

A programme of practical interest

- (1) The obtaining of a certificate from the Medical Officer of Health preliminary to the securing of a marriage licence.
- (2) Eugenic sterilization under adequate supervision for those for whom the vital interests of society require it.



REGINA GENERAL HOSPITAL

Thus, the Province took another step towards the elimination from its population of the mentally defective and the health insurance of its future generations.

Saskatchewan is credited with the most effective and complete health policy and organization of any of our provinces and promises to maintain its proud record as having the lowest death rate in the whole of the British Empire and perhaps in the world.

A REQUEST FROM THE HOTEL COMMITTEE

The Committee on hotel accommodation urge that reservations be made as early as possible directly with the hotels concerned because another convention is being held in the City of Regina at that time.

To-day—definite plans

Canadian Public Health Association

20TH ANNUAL MEETING

Saskatchewan Health Officials' Association

6TH ANNUAL MEETING

PROGRAMME

CONVENTION HEADQUARTERS, HOTEL SASKATCHEWAN, REGINA

Registration—Every member and visitor is requested to register promptly at the Registration Desk.

FIRST SESSION

Saskatchewan Health Officials' Association

Wednesday, June 17th, 10.00 a.m.

Chairman—Dr. W. R. Coles, Medical Officer of Health, Regina.

Several papers will be presented followed by the reception of reports and the holding of the annual business session of the Association.

Section of Vital Statistics

Wednesday, June 17th, 10.00 a.m.

Chairman's Address—Mr. Stuart Muirhead, Director of Vital Statistics, Provincial Department of Public Health, Regina, Saskatchewan.

"Aids to Complete Registration"—Mr. D. Mackie, Registrar, Vital Statistics Division, Provincial Department of Public Health, Edmonton, Alberta.

"Birth Registration and Birth Statistics in Canada"—A Review of Dr. Kuczynski's recent book—Mr. S. J. Manchester, Director of Vital Statistics, Department of Health, Ontario.

Discussion—Mr. A. P. Paget, Director, Division of Vital Statistics, Provincial Department of Health and Public Welfare, Manitoba.

"The Efficiency of Toxoid in Controlling Diphtheria, Toronto, 1926-1930"—Dr. N. E. McKinnon and Mary A. Ross, Department of Epidemiology and Biometrics, School of Hygiene, University of Toronto.

"The Influence of the Mortality Trend of Certain Diseases on Life Expectancy"—Dr. J. M. Livingston, Medical Director, Mutual Life Assurance Company of Canada, Waterloo.

Laboratory Section

Wednesday, June 17th, 10.00 a.m.

Chairman's Address—Dr. G. B. Reed, Professor of Bacteriology, Queen's University, Kingston, Ontario.

"Further Studies of B. Dysenteriae Sonne Infections"—Mrs. M. Johnston, Research Laboratory, Sick Children's Hospital, Toronto.

"Study of Haemolytic Streptococci from the Kirkland Lake Epidemic of Septic Sore Throat"—Dr. A. L. McNabb, Director, Division of Laboratories, Department of Health, Ontario.

"The Influence of Sulphur Compounds on the Production of Welchii Haemotoxin"—Dr. J. H. Orr, Department of Bacteriology, Queen's University, Kingston, Ontario.

Paper (title to be announced)—Dr. Norman MacL. Harris, Chief, Laboratory of Hygiene, Department of Pensions and National Health, Ottawa.

Paper (title to be announced)—Dr. F. T. Cadham, Director, Provincial Laboratory, Department of Health and Public Welfare, Manitoba.

(Additional papers are expected from several of the University, Research and Provincial Laboratories.)

SECOND SESSION

General Meeting of the Associations

Wednesday, June 17th, 2.00 p.m.

Address of Welcome—Mayor Balfour, City of Regina.

Hon. Dr. F. D. Munroe, Honorary President, Canadian Public Health Association.

President's Address—Dr. F. C. Middleton, President, Canadian Public Health Association.

"The Challenge of Tuberculosis"—Dr. David Stewart, Medical Superintendent, Manitoba Sanatorium, Ninette, Manitoba.

"THE MENACE OF RAW MILK"—

(a) "Tuberculosis"—Dr. R. I. Harris, Toronto.

(b) "Septic Sore Throat"—Dr. A. L. McKay, Director, Division of Preventable Diseases, Department of Health, Ontario.

(c) "Typhoid Fever"—Dr. A. E. Berry, Director, Division of Sanitary Engineering, Department of Health, Ontario.

(d) "Undulant Fever"—Dr. A. L. McNabb, Director, Division of Laboratories, Department of Health, Ontario.

Discussion—to be opened by Dr. N. H. Sutton, District Officer of Health, Department of Health, Ontario.

Wednesday, June 17th, 5.00 p.m.

Meeting of General Council, Canadian Public Health Association.

THIRD SESSION

Public Health Nursing Section

Thursday, June 18th, 9.30 a.m.

Chairman's Address—Ruby M. Simpson, Director of School Health Supervision, Provincial Department of Health, Regina.

"Publicity in Health Education"—Miss A. E. Wells, Provincial Department of Health and Public Welfare, Winnipeg.

"The Public Health Nurse in a Health Unit"—Miss K. Rowley, Health Unit No. 1, Saskatchewan.

"A Pre-Natal Programme for a Rural Area"—Miss M. McCuaig, Western Supervisor of the Victorian Order of Nurses.

Section of Vital Statistics

Thursday, June 18th, 9.30 a.m.

Chairman—Mr. Stuart Muirhead.

"THE PROBLEMS AND TREATMENT OF THE REGISTRATION OF NON-RESIDENT BIRTHS AND DEATHS"—

(a) "From the Standpoint of Urban Registration"

- (1) Mr. T. E. Ashton, Chief Statistician, Division of Vital Statistics, Department of Public Health, Toronto.
- (2) Mr. A. Roberts, Department of Health, City of Regina.

(b) "From the Standpoint of Provincial Registration"

- (1) Dr. Paul Parrot, Statistician, Department of Statistics, Provincial Bureau of Health, Quebec.
- (2) Mr. A. P. Paget, Director, Division of Vital Statistics, Provincial Department of Health and Public Welfare, Manitoba.

Discussion—to be opened by Dr. A. Grant Fleming, Professor of Public Health and Preventive Medicine, McGill University, Montreal.

Section of Mental Hygiene

Thursday, June 18th, 9.30 a.m.

A programme for this Section is being arranged by the following members:

Dr. A. T. Pincock, Medical Superintendent, Brandon Mental Hospital, Brandon, Manitoba.

Dr. J. W. MacNeill, Director of Mental Hygiene, Provincial Department of Health, Regina.

Dr. A. T. Mathers, Provincial Psychiatrist, Provincial Department of Health and Public Welfare, Winnipeg.

Dr. A. Grant Fleming, Professor of Public Health and Preventive Medicine, McGill University, Montreal.

Section of Public Health Engineering

Thursday, June 18th, 9.30 a.m.

Address by the Honorary Chairman—Dr. W. J. Bell, Deputy Minister, Department of Health, Ontario.

Chairman's Address—Mr. G. H. Ferguson, C.E., Chief Sanitary Engineer, Department of Pensions and National Health, Ottawa.

"The Organization and Plans of the Public Health Engineering Section"—Dr. A. E. Berry, Director, Division of Sanitary Engineering, Department of Health, Ontario.

"Developments in Sanitary Engineering and Their Relationship to Public Health Programmes"—Dr. John A. Amyot, C.M.G., Deputy-Minister, Department of Pensions and National Health, Ottawa.

"The Place of the Engineer in Milk Control Programmes"—Mr. R. H. Murray, C.E., Director of Sanitation, Department of Public Health, Saskatchewan.

Discussion—Mr. T. J. Lafrenière, C.E., Provincial Sanitary Engineer, Montreal; Dr. A. E. Berry, Director, Division of Sanitary Engineering, Department of Health, Ontario, and Mr. R. B. Owens, Provincial Sanitary Engineer, Department of Public Health, Alberta.

FOURTH SESSION

General Meeting of the Associations

Thursday, June 18th, 2.00 p.m.

President's Address—Dr. W. R. Coles, Medical Officer of Health, Regina; President of the Saskatchewan Health Officials' Association.

"The Problem of Immunization"—Dr. J. G. FitzGerald, Director, Connaught Laboratories and School of Hygiene, University of Toronto.

"Maternal Mortality"—Dr. John Fraser, Chief of the Obstetrical Services, Royal Victoria Hospital, Montreal, Que.

Address—Hon. Dr. E. W. Montgomery, Minister of Health and Public Welfare, Manitoba.

"Place of Mental Hygiene in a Public Health Programme"—Dr. A. Grant Fleming, Professor of Public Health and Preventive Medicine, McGill University, Montreal, Que.

"Studies of Bacillus Calmette Guérin (B.C.G.) Vaccine"—Dr. Alan Coats Rankin, Director of Provincial Laboratory, Department of Public Health, Edmonton.

FIFTH SESSION

Public Meeting

The F. N. Darke Hall for Music and Art

Thursday, June 18th, 8.00 p.m.

Chairman—His Honour, the Lieutenant Governor, Dr. H. E. Munroe.

Address—Hon. Dr. F. D. Munroe, Minister of Health, Saskatchewan.

"Public Health Aspects of the Cancer Problems"—Dr. E. E. Shepley, Chairman, Provincial Cancer Commission.

"Health Insurance"—Dr. Gordon A. Bates, General Secretary, Canadian Social Hygiene Council.

SIXTH SESSION

Public Health Nursing Section

Friday, June 19th, 9.30 a.m.

Chairman—Miss Ruby M. Simpson.

"A Mental Hygiene Programme"—Dr. J. W. MacNeill, Commissioner of Mental Services, Saskatchewan.

"The Public Health Nurse in the Mental Hygiene Field"—Emma de V. Clarke, Division of Mental Hygiene, Department of Public Health, City of Toronto.

"Behaviour Clinics"—(speaker to be announced).

Section of Vital Statistics

Friday, June 19th, 9.30 a.m.

"Definition of Still-Births"—Report of Committee. Chairman, Dr. Eugene Gagnon, Director, Division of Vital Statistics, Department of Health, City of Montreal.

"The Need for Uniformity in Vital Statistics"—Mr. H. B. French, Department of Vital Statistics, Provincial Department of Health, Victoria.

"The Classification of Maternal Mortality"—Dr. Helen MacMurchy, Chief, Division of Child Welfare, Department of Pensions and National Health, Ottawa.

"Statistics of Communicable Diseases"—Dominion Bureau of Statistics, Ottawa.

"Some Aspects of the Outbreak of Psittacosis in Burnaby, B.C."—Dr. J. W. McIntosh, D.P.H., Medical Officer of Health, Vancouver, B.C.

Paper (title to be announced)—Dr. H. B. Spaulding, Director of the Division of Statistics and Legislation, Canadian National Committee for Mental Hygiene, Toronto.

Public Health Engineering and Laboratory Sections Joint Meeting

Friday, June 19th, 9.30 a.m.

Chairman—Mr. G. H. Ferguson, C.E.

SYMPOSIUM—"STREAM POLLUTION"

(a) "The Stream Pollution Problem in Canada—The International Aspect"—G. H. Ferguson, C.E., Sanitary Engineer, Department of Pensions and National Health, Ottawa.

(b) "The Technique of Stream Investigations"—Dr. A. E. Berry, Director, Division of Sanitary Engineering, Provincial Department of Health, Toronto.

Discussion.

"Odour and Taste in Public Water Supplies—Prevention and Treatment"—N. J. Howard, Director, Filtration Plant Laboratory, City of Toronto.

"Studies in the Use of Chemicals in Milk Bottle Washing"—R. H. Burn, B.Sc., Division of Sanitary Engineering, Department of Health, Ontario.

SEVENTH SESSION

General Meeting of the Associations

Friday, June 19th, 2.00 p.m.

"County Health Units"—Dr. Alphonse Lessard, Director, Provincial Bureau of Health, Quebec.

"The Contribution of Junior Red Cross to Public Health"—Miss Jean Browne, Reg.N., Director of Junior Red Cross for Canada, Toronto.

"Control of Communicable Diseases in Rural Areas by Immunization"—Dr. F. W. Jackson, Deputy Minister of Health, Department of Health and Public Welfare, Manitoba.

"The Irradiation of Foodstuffs and the Significance of Solar Radiation from the Public Health Standpoint"—Dr. Alan Brown, Physician-in-Chief, Sick Children's Hospital, Toronto, Ontario.

RECEPTION OF REPORTS—

General Secretary's Report

Treasurer's Report

Committee on Nominations

Committee on Resolutions

Report of the Editorial Board of the CANADIAN PUBLIC HEALTH JOURNAL.

Editorials

THE MENACE OF UNSAFEGUARDED MILK SUPPLIES

IN a survey of 117 small towns and cities in the United States in 1927 (using the ordinary physical tests for the presence of dirt) it was found that in only two places could 75 per cent of the milk supplies be classed as "clean" or even as "fairly clean", and 97 of these 117 municipalities had no pasteurization. Would a similar survey of our smaller cities and towns in Canada reveal such a startling situation? The answer, we believe must be, yes! Even some of our largest cities have no adequate system of safeguarding the milk offered for consumption. Some have a small part of their supplies pasteurized, but no system is provided for regular inspection in order to maintain the efficiency of the process. Is it because of lack of knowledge of the dangers which menace their milk supplies that no action is taken by many health departments, or are the efforts of the local health authorities too often nullified by the opposition of certain members of the Municipal Council?

It is safe to presume that while many of the public may be ignorant as to the necessity for pasteurization, there is no health officer in Canada, however, who is not fully aware of the potential danger of permitting the distribution of milk which has not been so treated. Most of the responsibility for the absence of this local legislative measure in so many of the larger centres must presumably be placed, therefore, at the door of the members of the governing bodies in the centres concerned. One wonders if such an inference is well founded. If so, what influences municipal authorities in their attitude of opposition?

Some of these people are undoubtedly affected by purely selfish motives, some are misinformed, but, in the main, this opposition would appear to be based upon the inherent dislike of the Anglo-Saxon to all measures which are designed to restrict his right of personal choice. Mandatory legislation other than that which is likely to add to the protection of the personal property of the individual, has never been popular. The predecessors of the opponents of compulsory pasteurization led the opposition to obligatory school attendance. The forefathers of the anti-vaccinationist were in the front ranks of those who objected so strenuously to child labour laws. It has always been so, and, yet, much in the way of protective legislation bitterly opposed on its initiation, has been ultimately accepted as being in the best interests of all concerned. The remedy is an educational programme as persistent as its opposition, directed at the leaders of public opinion.

J. T. Phair.

PUBLIC HEALTH NURSING

RUBY M. SIMPSON, Reg.N., and BARBARA A. ROSS, Reg.N.

Control of the Tuberculosis Contact

MISS DAVIDSON, REG.N., EDMONTON, ALBERTA.

Nurse in charge of the Edmonton Kinsmen Club's Tuberculosis Work.

"**M**ORE and more we think of tuberculosis as a universal disease; universal not only in the sense that it is found in all countries, among all classes and under all conditions, but universal in a wider sense, in that it becomes implanted at some time and to some degree in practically every individual. Childhood is the usual time of implantation, the seed time; adult life is usually the time of breakdown, the harvest. There are likely few children at the age of leaving school who have entirely escaped tuberculosis infection, and few adults, if any, in whom the seeds and roots are not lying latent." In these striking words Dr. D. A. Stewart has expressed clearly the modern conception of tuberculosis.

Tuberculosis attacks the individual, but, in its essence, it is a community disease. It has been called a "housing" disease, because it is found most frequently where there are bad housing conditions with overcrowding; where there is daily close association of people with careless and dirty habits; where there is lack of sunshine, and where windows are nailed down; among people who are ignorant of the elementary rules of healthful living, or who do know, but know-

ing, are grossly careless. Here is a case in point:

The G—— family consisted of father and mother and four children, —the oldest, a girl of 14 years, the youngest, a boy of six. They lived in a two-roomed shack with no modern conveniences. In the one bedroom were two double beds, one occupied by the parents, the other by the two girls, aged 14 and 8. The window of this room was nailed down. The boys slept in the kitchen-living room. Mrs. G—— came for examination in May, 1929, and was obviously quite ill. She had been ailing for a year, becoming progressively worse. She was admitted to the Sanatorium in June. During the month previous to admission she was visited often, advised and assisted in various ways, but both the patient and her husband showed little response. The children, when examined, showed positive reactions to the tuberculin test. In November, Mr. G—— insisted on taking his wife from the Sanatorium in spite of being warned of the danger to the children. She died one month later and two weeks from that date, the girl of 14, who had cared for the mother, contracted a "bad cold", followed by pleurisy,

and to-day she is in the Sanatorium with a gross tuberculosis infection.

Tuberculosis has also been called an economic disease. It is found among the poor whose lives are hard, where unrelenting toil is their daily portion, where an individual having caught a bad cold cannot afford the time to rest until thoroughly recovered, or pay for doctor or hospital services. There the soil is all ready for the tubercle bacillus to get in its deadly work.

To-day there is another factor that has to be seriously considered as a contributory cause of tuberculosis, the over expenditure of energy, and, unfortunately, this applies in large measure to the young people.

Both sexes from 14 to 20 years of age are working hard and playing far too hard. Strenuous sports for boys, the necessary training for such, with lack of supervision over leisure hours when rest is necessary; the same strenuous sports for girls with the present day craze for slimness, and in both sexes a demand for swiftly moving pleasures have depleted to a dangerous extent the reserve necessary to fight the infection already implanted there. Given an epidemic of colds or influenza and that reserve becomes non-existent, or given repeated contact with an active case of tuberculosis, and we see the results in the overcrowded clinic and in the wards of our sanatoria.

Tuberculosis is not cured by a visit to a physician or by a bottle of medicine. It takes months and in most cases years to recover even a measure of health, and, when the individual attacked is young, the best and most productive years are spent trying to

regain that which should never have been lost. Instead of being an economic asset to the community, he is an economic liability. Here are a few instances of what I mean:

John, aged 18, worked in a city office, in the evenings studied for an important examination, played hockey, skated, danced. He contracted pneumonia eighteen months ago. He had wasted his reserve. He spent one year in the sanatorium, and is home now, but both his lungs are affected and recovery is uncertain.

Elden, a boy of 17 at high school, working fairly hard, late hours, smoking hard, contracted influenza followed by pleurisy, and he has been ordered to bed for one year. He does not understand the necessity for rest and indulges in a few miles on his bicycle when he gets tired of bed.

Phyllis, age 20 years, an only child, had influenza three years ago during winter, and did not appear to recover quickly. She insisted on skating, dancing and on continuing in school. She has spent one year in the sanatorium, and is still confined to bed with both lungs involved and with little hope of recovery.

These are only three of many such cases.

Measures against tuberculosis can be divided into two categories, prophylactic and curative. It is with the former we are interested. If every case of tuberculosis could be diagnosed early and isolated until danger of infection is over, the disease would be reduced to a minimum in a comparatively short period, but with the inability of the patient to realize, or his reluctance to admit, that he is ailing, with the consequent difficulty of early diagnosis, it makes it impossible to control the disease by this means. Education of the patient when diagnosed and proper measures for the protection of the contacts are our best weapons at present.

The Plan in Edmonton.

In the city of Edmonton, working in conjunction with the Provincial Tuberculosis Clinic, a tuberculosis follow-up nursing service was put in operation by the Kinsmen's Club in November, 1928. This has been recognized as a community effort. Physicians, hospitals, city health departments and other health and social organizations have given from the first excellent co-operation. When a case is reported, and this report may come from a private physician, from the school medical officer, from the city health department or from the outdoor clinic, the patient is dealt with in one of several ways. He may be admitted to the sanatorium or to a local hospital, or he may be isolated at home. If the latter, he is educated carefully by the visiting nurse so as to follow the doctor's instructions for his own care and in the safeguarding of the other members of the family. The supervision of the contacts, however, is the main responsibility of the visiting nurse.

If there are children in the home, the parents are advised to have them examined by the family doctor, or, at his request, they may be, and most frequently are, examined at the Provincial Tuberculosis Clinic, where they are given the tuberculin test, and, whether this proves positive or negative, they are brought for examination every three, four or six months, according to the degree of infection to which they have been exposed. If, however, during the intervening weeks, they contract a cold or other respiratory disease, as soon as they have apparently recovered, they are

again brought for examination. Along with the periodic clinical examination, there is home supervision. During these visits, cleanliness, fresh air, good food and regular hours of rest are emphasized, especially the last. Interest is taken in the family as a unit (not in one individual). If the children are attending school, the school medical officer is informed, and there is a counter check by him and his nurses. For the pre-school child there is the private doctor or the pre-school clinic as well as the Provincial Clinic.

Where poverty is a contributing factor, extra nourishment is supplied in the form of milk, eggs, cod liver oil and, on occasion, vegetables and fruit are given. (This is made possible through a fund provided by the Kinsmen's Club.) The family is introduced to other social agencies, and every effort is made to raise the standard of living for this family unit and to keep the general health of the contacts at a reasonably high level.

Unfortunately, there is no preventorium in Alberta, and, where there is an active case of tuberculosis in a home, almost the only thing to be done is to remove the patient. Here again we are faced with a shortage of beds, both in local hospitals and in the sanatorium, and, while waiting admission, much harm can be done. The following case is an illustration:

Fred D., 35 years of age, a married man with five children from 14-5 years, was diagnosed as pulmonary tuberculosis in January, 1929. He was put on the waiting list. In the meantime the home was visited, and he was advised and warned, particularly about his filthy habit of spitting where and when he pleased. Mrs. D. was given the usual help. Windows were

found nailed down, the nails were drawn and the windows left open, only to be found as tightly closed on every subsequent visit.

The patient was admitted to the Sanatorium four months later, and in December his wife and eldest daughter followed him, having developed the disease. This is a case where a shortage of beds, combined with wilful ignorance and dirty habits, was, undoubtedly, the cause of the spread of the disease.

Where the contacts are 'teen age, particularly during the years of adolescence, special pains are taken to educate the parents in the necessity for constant vigilance. In this group, a lack of discipline, the urge for pleasure, the know-all attitude with a resentment against supervision and real hard work in the form of study make control difficult. The following figures show that real control and supervision are urgently needed:

In Edmonton during the months of December, 1929, to May, 1930, 62 new positive cases were reported. Of these, 30 were under 21 years of age

and all but 2 were under 30. Of the 30 under 21 years, 25 were contacts.

For the care of contacts, fresh air, cleanliness and good food, reasonable rest hours and periodic examinations are the safeguards which are needed. Where the co-operation of the family group and the family physician is assured, good results are certain; where this co-operation is lacking, little or nothing can be done, and at many points there is a slowly spreading, festering sore which finds its greatest number of victims among the young.

If every medical student would leave university trained as a teacher in the prevention of disease, trained to consider that his patient is only a part of the family unit and that unit is *his* responsibility in its relation to the health of the community, and, when the family unit is educated to *its* responsibility for the health of the community as a whole, then we may consider we have a fighting chance to defeat tuberculosis.

REPORTED CASES OF CERTAIN COMMUNICABLE DISEASES IN CANADA* BY PROVINCES—FEBRUARY, 1931

Diseases	P.E.I.	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
Diphtheria....	1	30	7	107	130	27	47	15	20
Scarlet Fever..	8	32	22	321	766	54	85	63	67
Measles.....	—	—	40	723	258	343	682	192	6
Whooping Cough.....	—	2	—	142	316	31	27	6	134
German Measles....	—	—	—	24	67	†	36	4	6
Mumps.....	—	2	—	128	721	428	111	42	161
Smallpox.....	1	—	—	—	16	—	68	—	—
Cerebrospinal Meningitis..	—	2	—	5	5	4	—	—	2
Anterior Poliomyelitis	—	1	—	1	1	1	1	—	—
Typhoid Fever	—	—	4	55	21	1	6	1	3

*Data furnished by the Dominion Bureau of Statistics, Ottawa.

†Not reportable.

INDUSTRIAL HYGIENE

F. C. PEDLEY, B.A., M.B., D.P.H. AND J. G. CUNNINGHAM, B.A., M.B., D.P.H.

Health Records for 1930

R. VANCE WARD, M.D.

AS the vital statistics of various groups and communities for the year 1930 are completed, we are faced with an apparent contradiction of one of the cardinal principles of Industrial Hygiene. For years we have taught that high wages with their associated high standards of living have brought decreased mortality and morbidity, and that, conversely, low wages and unemployment have, whenever they have prevailed, carried in their train unfavourable health conditions. Yet everything points to the fact that 1930, a year of industrial depression, widespread unemployment and distress, has been the healthiest that the North American continent has yet seen.

The mortality among the twenty million industrial policy-holders of the Metropolitan Life Insurance Company—nearly one-sixth of the combined populations of Canada and the United States—is a very accurate index to health conditions in those countries. In the statistical bulletin of that company for January, 1931, a detailed review of the trend of mortality rates for the principal causes of death from 1911 to 1930 is published and a study of this work gives one some idea of the great strides

which have been made in preventive medicine in the past twenty years.

In 1911 the death rate of this group was 12.5 per thousand. Last year a new minimum of 8.3 per thousand lives at risk (ages one and over) was registered. Had the rate of 1911 prevailed in 1930, 227,836 policy-holders would have died during the year. Instead the deaths numbered only 151,510.

Most of this saving has been the result of a few outstanding accomplishments in preventive medicine, the most notable of these being the partial control of tuberculosis, the virtual abolition of typhoid and the reduction in the incidence of diphtheria. With the exception of two years, 1918 and 1926, every year has contributed to a fall in the mortality from tuberculosis from the rate of 224.6 in 1911 to one of 80.9 in 1930. As we pointed out in a previous review the rate of decline from this disease has been much more rapid in this industrial group than in the population at large.

In 1911 the death rate from typhoid was 22.8 per 100,000. Last year it again reached the minimum established in 1929 of 2.4 per 100,000. The complete conquest of this disease is now, in the opinion of the Metropoli-

tan statisticians, a question almost entirely of improved rural sanitation.

Surpassing in degree even the decline of the death rate from tuberculosis has been the drop in the diphtheria mortality from 22.8 per 100,000 in 1911 to 5.7 last year.

Coupled with a decline in the pneumonia and influenza mortality has gone, as usual, some decline in the mortality from chronic degenerative diseases of middle and later life.

Not only have mortality rates

senteism in the plants whose health services it controls. The accompanying table shows the improvement.

It is difficult to ascribe this improvement to any one factor. Undoubtedly the cumulative effect of all the health work that has been done among the industrial population in the past ten years is beginning to show; in addition, there is the well-known tendency for the public health to be greatly improved following an epidemic such as we had in December, 1928. During

Percentage of lost time from sickness in four industrial plants in Montreal.

Plant No.	No. of employees	1928	1929	1930
1	500	1.65	1.25	1.12
2	850	2.09	1.42	1.36
3	350	—	1.68	1.73
4	2000	2.15	2.05	1.66

shown a marked decline in 1930, but such records as we have of lost time from sickness show an equally favourable situation. For the past three years the Industrial Clinic of the Montreal General Hospital has been keeping accurate records of sick ab-

the greater part of 1930 we were favoured with mild and equable weather conditions, and this fact, coupled with the absence of any severe epidemics, has helped us to establish an all-time record for health among the wage-earning population.

COMING MEETINGS

- Ontario Health Officers' Association, Toronto, May 20th-22nd, 1931.
- Ontario Medical Association—Niagara Falls, Ont., May 26th-29th, 1931.
- American Psychiatric Association, Toronto, Ont., June 1st to 5th, 1931.
- Canadian Public Health Association and Saskatchewan Health Officials' Association—Regina, Sask., June 17th, 18th and 19th, 1931.
- Canadian Tuberculosis Association, Tranquille, B.C.—week of June 21st, 1931.
- Canadian Medical Association, Vancouver, B.C., June 22nd to 26th, 1931.
- Nova Scotia Health Officers' Association and Nova Scotia Medical Association, Truro, July 7th to 9th, 1931.

PUBLIC HEALTH ADMINISTRATION

J. W. MCINTOSH, B.A., M.B., D.P.H. AND FRED ADAMS, M.B., D.P.H.

The Annual Report of the Medical Officer of Health

DOCTOR S. L. WALKER, Editor of the Nova Scotia Medical Bulletin, has drawn attention in an editorial in the current issue of the Bulletin to the importance of annual reports. The following paragraphs from this excellent editorial contain a message for all health officers:

"Now we are inclined to undervalue annual reports because they are such a monotonous thing to prepare, because they portray your own activities and are generally minimized by those who knew they should have had the job, but chiefly because they are generally received, adopted and filed away, never to be thought of again. Yet, we say, this is no excuse for any medical health officer in Nova Scotia failing to give his employers information as to what was done, and what should be done, to better the health of the community.

"The reports, as we have perused them in a number of instances, fall into certain classes, somewhat as follows:

1. There are some reports that barely comply with the law requiring that such reports be submitted. They say nothing, for there is nothing to say as nothing has been done but to cash the annual cheque for \$100.00.

2. Some reports have a form of covering the matters relating to health,

speaking of a few cases of contagious diseases, mild epidemics, very few deaths, a very creditable year owing to these things and the hearty co-operation of various local boards of health. Just a lot of words.

3. Some reports appear to consider the matter of community health seriously, attempt to picture the real conditions, and then urge the Council to enact regulations that will prevent disease and promote health. Too often this report is quite critical of the acts of some persons with whom the author of the report is evidently not in agreement, politically or otherwise. This is a good report as a means of making a Council realize the importance of the job of the health officer, but it seldom gets anywhere, because there is always something in it that makes someone sore.

4. Then there are some reports that very plainly point out to Councils what might be done to better conditions, how so much illness is unnecessary, that epidemics need not spread, and that communities should bear their share of the financial burden that modern methods of prevention have shown to be effective.

Now this year we have read several reports that we have no hesitation in placing under heads (1) and (2), and our only comment is that the usual

honorarium of \$100.00 very considerably overpaid these officials for their services. We have also read reports that might be roughly placed under class (3) or (4) and, while the last is the only report that will bear good fruit, both show an earnest effort to furnish the Councils with sound advice on health matters. Health officers should realize better than any other medical men how hard it is to convince the average layman that freedom from disease is possible, that it is good business to secure it, and that the responsibility rests upon the Council, the municipality, the district and the individual taxpayer. This is a burden that can never be assumed by

any other authority, although it should be assisted and directed by a central health authority.

"It is right and proper that the Department of Health should be the source of inspiration for the local health officer, but it is his bounden duty to endeavour to mould public opinion in his district to support well recognized health procedures. The day has gone by when a health officer has to cut an individual swath of education; the day has come when co-operative effort may accomplish the things the pioneers could only see by the eye of faith, and that needed also a little imagination."

NEWS AND COMMENTS

P. A. T. SNEATH, M.D., D.P.H.

State and Provincial Health Officials' Association

THE Annual Conference of the State and Provincial Health Officials' Association was held in Washington, April 27th to 30th. Dr. F. C. Middleton, Deputy Minister of Health, Saskatchewan, presented "A Review of Official Public Health Administration in Saskatchewan", and Dr. W. J. Bell, Deputy Minister of Health, Ontario, outlined "Canadian Government Agencies for Public Health Administration".

Royal Sanitary Institute

THE forty-second congress of this Institute will be held in Glasgow, July 4th to 11th under the presidency of Sir Henry Mehan. The sectional presidents include Dr. J. Parlance Kinloch (preventive medicine), Dame Louise McIlroy (maternity, child welfare and school hygiene), Sir Davis Munroe (hygiene in industry), and

Dr. J. R. Currie (conference of medical officers of health).

British Columbia

A Committee has been appointed by the Vancouver Medical Association to investigate the cancer question as it affects the City of Vancouver. Dr. I. J. Mason was selected as Chairman and Dr. A. Y. McNair as Secretary.

THE Canadian Medical Association's 62nd Annual Meeting will be held in Vancouver, June 22nd to 26th. As no section meetings are planned, the papers from the various sections will be contributed to the general programme which is of unusual interest.

The Annual Meeting of the Canadian Tuberculosis Association will be held at the Sanatorium, Tranquille, British Columbia. Through the arrangement of dates, members of the Canadian Public Health Association

will be able to attend this meeting at the Sanatorium, spending Saturday and Sunday at Kamloops and Tranquille and arriving in Vancouver in time for the meetings of the Canadian Medical Association.

Alberta

DR. A. H. BAKER, Superintendent, of the Provincial Sanatorium, has drawn attention to the urgent need for additional accommodation. He stated that at the present 180 patients requiring sanatorium care cannot be accommodated. An additional 180 beds are necessary. The Honourable Dr. Hoadley, Minister of Health, regretfully stated that the Provincial Government could not undertake at the present time the necessary addition.

Saskatchewan

AT the recent session of the Legislature a motion was made to limit the free treatment for tuberculosis to those unable to pay for treatment, instead of providing free treatment to all who suffer from this disease. The motion was overwhelmingly defeated. A request for legislation to require health certificates before marriage and sterilization of mental defectives was presented by Mr. Patterson, Milestone, and a formal resolution embodying the request was passed by the Legislature.

Manitoba

THE Cancer Relief and Research Institute of Manitoba has made certain regulations concerning the use and issue of radium to physicians. Radium or its emanations will be issued only to physicians who have spent at least two months in intensive study of its use at a recognized clinic or who have had an equivalent practical experience. It is required, also, that physicians receiving radium undertake to provide the Board with a complete record of patients treated. The names of all physicians meeting these requirements will be placed on

an "approved" list, which list will be kept by the Secretary of the Board. Additional names will be added as applications are accepted by the Treatment and Research Committee.

Every effort is being made to control trachoma in Manitoba. Dr. F. W. Jackson, Deputy Minister of Health, has recently stated that a survey which included the examination of 10,000 cases of eye diseases made by the Department during the past two years revealed the presence of 400 cases of trachoma. The disease has established itself in the district between Gretna and Morden in the southern part of the Province. Aid in the treatment is offered by the Department by the payment of one-quarter of the clinics and treatment, and the municipalities involved are expected to take care of the balance of the expense.

Ontario

THE Annual Meeting of the Ontario Society for Crippled Children was held in Toronto, March 6th. There are now some fifty centres in Ontario in which an active programme is being carried on. Each year there are new evidences of the growing interest in the physical restoration and the social rehabilitation of crippled children.

The Victorian Order of Nurses conducted an institute for maternal care on March 11th and 12th in Toronto at the request of the Community Health Association.

Professor J. G. FitzGerald, Director of the School of Hygiene and Connaught Laboratories, University of Toronto, who was elected last year as one of the four public health assessors of the Health Committee of the League of Nations, is attending the 17th session of the Health Committee in Geneva, Switzerland, during the second week of May.

Professor FitzGerald has also re-

cently been made a member of the Board of Scientific Directors, International Health Division, Rockefeller Foundation.

The 11th Annual Meeting of the Canadian Council on Child and Family Welfare was held at Ottawa on April 28th and 29th. At the request of several of the larger social agencies in Canada, the Council arranged a confidential Round Table Conference on non-employment conditions dealing with related social problems and the anticipated needs for the fall and winter of 1931-32.

Quebec

THE opening of the new building of the Montreal Day Nursery by Sir Henry Thornton, took place on Tuesday, March 10th.

An experimental recreational and physical educational class for male patients at the Verdun Protestant Hospital for the Insane is being conducted by a member of the staff of the South Western Y.M.C.A. Dr. E. C. Menzies of the hospital reports that the class is playing a definite part in improving the mental health of the participants.

New Brunswick

A Bill was introduced at the recent session of the Provincial Legislature providing for changes in hospital legislation. The purpose of the Bill was to more clearly designate the legal settlement of an indigent patient, to make possible the collection of fees by the hospital for the treatment of non-resident, indigent patients, and to enable counties to make provision by assessment for the care of indigents. Minimum standards for training schools for nurses were established and the definition and minimum requirements for a public hospital were also defined. A highly controversial matter was raised in the subject of

regulations governing the administration of anaesthetics.

The Honourable Dr. H. I. Taylor, Minister of Health and Labour, has completed attendance at 24 sessions of the Legislature in New Brunswick and is accorded the honour of being Dean of the Legislature. He was first elected member of the House for Charlotte County in 1908 and has continuously represented this constituency.

Nova Scotia

THE Annual Meeting of the Nova Scotia Health Officers' Association will be held at Truro, Nova Scotia, on Tuesday, July 7th. On Wednesday and Thursday of the same week the 78th Annual Meeting of the Medical Society of Nova Scotia will be held. Dr. W. F. MacKinnon of Antigonish is President of the Health Officers' Association. It is planned to have in addition to the morning and afternoon sessions, an evening meeting to be addressed by the Honourable Dr. Murphy, Minister of Health. The meetings will be held in the Assembly Hall of the Colchester Academy, Prince Street.

A delegation representative of nearly all the hospitals in the Province recently waited on Premier Harrington and presented several requests. They asked that the present provisions of the local Hospitals' Act be amended so that the grants be increased and that the maximum be 50 cents per patient day unconditionally and the minimum of 30 cents for every hospital day. The subject of annexes to local hospitals for tuberculosis patients in Eastern Nova Scotia was discussed and amendments were sought to the local Hospitals' Act to relieve hospital boards of the onerous duty of collecting debts from indigent patients throughout the municipalities. The requests were presented by Mr. L. D. Currey of Glace Bay.

Books and Reports

D. T. FRASER, B.A., M.B., D.P.H.; R. R. McCLENAHAN, B.A., M.B., D.P.H.

The Principles of Epidemiology and the Process of Infection—

By C. O. Stallybrass, M.D. (*State Medicine*), D.P.H., Chief Assistant Medical Officer of Health, City and Port of Liverpool. Publishers, George Routledge and Son, Ltd., London, England, 1931. Pages 696, Price 30s net.

"The origin of epidemiology is historical, the earlier authors mainly describing the epidemics of the past; whilst this aspect has not been overlooked, it is the history of ideas, rather than of epidemics, which is here recorded. But the basis of the science is the knowledge of the process of infection of the individual, and of the responses to infection of the individual and of the herd. So clinical medicine, pathology, bacteriology and immunology all bring grist to the epidemiologist's mill. Latterly mathematical methods have also been used with the hope of simplifying the issues.

"It has been the author's endeavour to present in one volume a systematic summary of this knowledge, much of it recently acquired; this book is primarily intended for the Medical Officer of Health, who often has scant leisure to read the ever-increasing volume of writings published in many languages."

This quotation from the preface shows the general purport of this book and for whom it is intended,—medical officers of health. In the 649 pages the reader will find a vast amount of material, historical, speculative, and practical, in relation to communicable disease in general. He

will not find, at least readily, detailed information in regard to a particular disease. Such details are scattered under various general headings throughout the book. Forty-seven pages are devoted to statistical methods, including ascertainment of data, rates and ratios, averages, dispersion, frequency distribution and correlation. Two chapters deal with the epidemic wave, experimental epidemiology, the genesis of epidemics, periodicity, etc.

The subject matter is attractively presented, well illustrated with tables and diagrams. The most of it has been subjected to the critical analysis of the author whose broad experience renders his conclusions valuable.

The reviewer questions the success of the arrangement of the subject matter and considers that the book would be improved by the exclusion of that which is now obsolete or lacks confirmation. Ehrlich's side-chain theory, Vaughan's isolation of tyrotoxin, Rosenow's table of localization, Chevassut's reported findings in disseminated sclerosis are examples. Such material is not of much value to medical officers of health. There are a few errors which should not have passed the proof reader. For instance, the discovery of toxin is placed in 1899 (page 84).

An extensive, though incomplete, author index and bibliography and a well-arranged subject index add to the value of the book.

On the whole this book is interesting, instructive and stimulating and should have a good reception among public health workers.

N. E. McK.

BOOKS RECEIVED

The Prevention of Disease in the Community—By Curtis M. Hilliard.

Prenatal Care—Publication No. 4. United States Department of Labor, Children's Bureau, 1930.

Health at the Gateway—By E. W. Hope.

Insects, Ticks, Mites and Venomous Animals—Part II, Public Health. By Walter Scott Patton, M.B., Ch.B. (Edin.), F.E.S.

The Vitamins—By H. C. Sherman and S. L. Smith.

CURRENT HEALTH LITERATURE

These brief abstracts are intended to direct attention to some articles in various journals which have been published during the preceding month. The Secretary of the Editorial Board is pleased to mail any of the journals referred to so that the abstracted article may be read in its entirety. No charge is made for this service. Prompt return (within three days) is requested in order that the journals may be available to other readers.

Bismarsen in the Treatment of Syphilis—An appraisal of the newest arsphenamine synthetic in the treatment of syphilis based on 7,666 injections in 341 cases during five years. The arsenical content is from 12 to 15 per cent and the bismuth content from 23 to 25 per cent. It offers the greatest promise in the treatment of early syphilis. It is recommended for continuous treatment without rest intervals,—two injections per week up to as near forty injections as possible. The relative simplicity of administration, the comparative rarity of complications, the low proportion of relapse, all seem to point to bismuth arsphenamine sulphonate as a practitioner's advance in the control of syphilis.

Stoakes, J. H., Miller, T. H., and Beerman, H., *Arch. Dermat. & Syph.*, v. 23, No. 4 (Apr.), pp. 624-643.

A Serological Study of Meningococci—More than 80 per cent of the 235 cultures from the recent epidemics in the United States (1928-30) were found on typing to be Type I or Type III. A study of the geographic distribution of the strains indicates that, although small isolated outbreaks are found due to one type, more extensive epidemics may involve all varieties.

Branham, S. E., Taft, C. E. and Carlin, S. A., *Pub. Health Rep.*, v. 46, No. 16 (Apr. 17), pp. 897-916.

The Rheumatic Child—A careful survey of school children in Cardiff, Wales, showed that one per cent presented signs of rheumatism. As a result of the investigation, a hospital was made possible by a generous donor for the treatment of juvenile rheumatism. In seven months from its opening, (April, 1930), 187 children have been admitted. Only 34 of 145 rheumatics treated to a conclusion in this period were found to have normal hearts on admission, but on discharge this figure had been raised to 91. Thirty-four children admitted acutely or sub-acutely ill with normal hearts went through the attack without developing any cardiac complications. A brief paper filled with interesting findings.

McSweeney, C. J., *J. Roy. San. Inst.*, v. LI, No. 10 (Apr.), pp. 570-573.

Recent Methods of Sewage Treatment—The author prefers the use of the term "activated humus" to "activated sludge". Some results of the experimental plant of the London County Council at Crossness are presented in this paper. The use of two-tier channels permitted twice the volume of sewage to be treated and represented a definite saving. An extensive discussion by members of the Institute of the paper together with plans of the two-tier channel are published with the paper.

Butler, Brevet Lieut. Col., *J. Roy. San. Inst.*, v. LI, No. 10 (Apr.), pp. 541-559.

An Infection of the Rocky Mountain Fever Type—In an analysis of 100 cases in which symptoms resembling those of endemic typhus fever in the Eastern United States, the authors had no difficulty in separating the cases into two groups,—one group which was clearly endemic typhus and the other group which was clinically indistinguishable from Rocky Mountain spotted fever. That this fever has spread from Montana to the Eastern United States is of great interest and brings to attention the danger of tick bites.

Badger, L. F., Dyer, R. E., Rumreich, A., *Pub. Health Rep.*, v. 46, No. 9, (Feb. 27), pp. 463-469.

Poliomyelitis Epidemic in Alsace, France—An extensive epidemic appeared in lower Alsace last summer. Eighty-four per cent of the cases (405 in number) appeared in children under six years of age and the mortality rate in this group was 7.5 per cent.

The official report by Messrs. Levaditti, Schmutz and Willemin contains valuable information. In reference to the spread of infection, the Commission stresses the importance of inter-human contact, but believe that such contact does not suffice in itself. Other factors of a geographic, geological, hydrographic and meteorological character come into play. The Commission is far from inclined to reject the theory of the water-borne character of its transmission. In discussing this, they state that one might assume that some water-borne organism, serving as a host for the virus, might carry the latter to rivers. Examinations of drinking water were constantly nega-

tive. It was, also, well established that biting insects, and more particularly mosquitos, play no part in the epidemic propagation of poliomyelitis.

Foreign Letters, Paris Correspondent, *J.A.M.A.*, v. 96, No. 2 (Jan. 10), pp. 126-127.

Make Facts Convincing—"Where charts may be used, kinds of charts, size of charts, materials for chart making, lettering, etc., etc.," A practical article of value to all who are interested in the visual presentation of facts.

Merwin, M. and Davis, H., *Pub. Health Nurse*, v. XXIII, No. 4 (Apr.), pp. 173-176.

Some Results of Tuberculosis Administration in Cattaraugus County, New York—An attempt is made to appraise the results in this rural area during the period 1923-1929. The development of facilities for discovery, care and supervision of tuberculous cases has resulted in the bringing of an increased number of active cases under supervision, the finding of a larger number of minimal cases and a reduction in the fatality of supervised active cases, particularly of children and adolescents. The study must be regarded as a progress report as it is too early to appraise ultimate results.

Downes, J. and Sydenstricker, E., *Tubercle*, v. XII, No. 7 (Apr.), pp. 296-312.

Smoke Eradication—A first-class presentation of the effect of smoke on health in cities, stressing particularly the loss of the ultra-violet rays of sunshine. An interesting discussion of the electric heating of homes by using the "off-peak" current.

DeYoung, P., *Am. J. Pub. Health*, v. XXI, No. 4 (Apr.), pp. 344-354.

